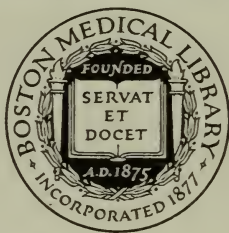


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Official Journal

SUBJECT:

Milk as a Source of Contagion in Typhoid
Fever Epidemics.



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JOURNAL

OF THE

MASSACHUSETTS ASSOCIATION

OF

BOARDS OF HEALTH.

Issued Quarterly.

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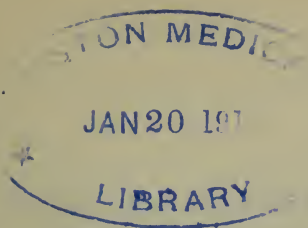
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MASSACHUSETTS ASSOCIATION OF BOARDS OF HEALTH.

Organized 1890.

[This Association as a body is not responsible for statements or opinions of any of its members.]

VOL. III.

JANUARY, 1893.

NO. I.

ANNUAL MEETING.

THE Annual Meeting of the Massachusetts Association of Boards of Health was held at the Parker House, Boston, on Thursday, January 26, 1893.

The meeting was called to order by the president, Dr. Henry P. Walcott, Chairman of the State Board of Health.

It was voted that a nominating committee of three, to nominate officers for the ensuing year, should be appointed by the chair, and the chair appointed Messrs. Babbitt, Coffey and Sawyer as such committee.

A recess of fifteen minutes was taken in order that a meeting of the executive committee might be held. After the recess the secretary read the records of the last meeting of the Association, and they were approved.

The following names of gentlemen proposed for membership, having been acted upon by the executive committee, the gentlemen were duly elected as members of the Association :

J. E. Sanborne, M. D., Melrose ; John Dike, M. D., Melrose ; Marcus M. Fiske, Weston ; E. W. Everson, Marshfield ; Dr. Arthur, Marshfield ; Wm. L. Hicks, Boston ; W. F. Morse, New York, N. Y. ; W. H. Duncan, Gloucester ; James Sayles, Lowell ; N. D. Johnson, and Raymond L. Newcomb, Waltham.

The executive committee reported that a permanent committee of the Association upon the powers of local Boards of Health and sanitary legislation should be appointed by the Association, the committee to be selected by the president. Carried.

The executive committee also recommended that a committee on mortuary statistics be appointed in the same way. Carried.

The treasurer read his report.

The committee on nominations reported the following list of names for officers for the ensuing year :

President: H. P. Walcott, M. D., Cambridge. Vice-Presidents: Samuel H. Durgin, M. D., Boston; Samuel W. Abbott, M. D., Wakefield. Secretary: Lemuel F. Woodward, M. D., Worcester. Treasurer: James B. Field, M. D., Lowell. Executive Committees: for two years, W. H. Chapin, M. D., Springfield; E. A. Sawyer, M. D., Gardner; J. B. Clark, M. D., Medford; A. L. Lincoln, Esq., Brookline; W. S. French, Newton. For one year: C. H. Morrow, M. D., Gloucester; Edwin Farnham, M. D., Cambridge; G. L. Tobey, M. D., Clinton; Prof. L. P. Kinnicutt, Worcester; George F. Babbitt, Boston.

The report of the committee was accepted. The gentlemen whose names were reported by the nominating committee were duly elected as officers for the ensuing year.

The PRESIDENT. Is there any incidental business, or are there any oral communications to be made at this time?

DR. DURGIN. If there are no matters of business I would like to make a very brief statement as an oral communication. It will be remembered by the Society, that at their April meeting in Waltham, we discussed the resolutions which had then recently been passed by the Board of Health of Boston concerning cow stables and the inspection of cows within that city. I wanted merely to report progress briefly. The regulations which we then considered were sent out to every person in the

city who was known to have a cow stable, and the inspection by a veterinarian was delayed until November. The latter part of November we began that work, having given these people several months in which to consider what they would do with their stables and cows. Our inspectors had, meanwhile, been looking over the stables, and requiring either the abolishment of the old stable or the repair of the same so as to conform to the regulations, and in the latter part of November we began the inspection of the animals.

We have not completed the work, but we found the number of cows within the city limits to be something over two thousand three hundred, and the number of stables slightly above seven hundred. We have already examined about three hundred and fifty of the stables and about two thousand of the cows. As a result of this examination we have found but three cows to condemn, and only two others have been placed under suspicion. It may surprise you that we found so few cows to condemn and so few others to be regarded with suspicion; but it seems to me that the explanation may fairly be made that the time given to dispose of the sick cows was ample and was taken advantage of. (Applause.)

THE PRESIDENT. Does any other gentleman desire to make any communication to the Society at this time? If not, the first regular paper of the session is one upon "An Epidemic of Typhoid Fever, due to Infected Milk," by Prof. W. T. Sedgwick, of the Massachusetts Institute of Technology.

I have the pleasure of presenting to you Prof. Sedgwick.

PROF. SEDGWICK I suppose it is very likely that there is every year in Massachusetts a considerable number of epidemics of typhoid fever due to infected milk.* I am able to state positively that there have been two, at least, in 1892. The

*Prof. Sedgwick desires to have it understood that what follows is the stenographer's report of his remarks. A full account of the outbreak here described, illustrated with a map and diagrams, will appear in the forthcoming Report of the State Board of Health for 1892.

report of one of these I now propose with the kind permission of the State Board of Health to lay before you. The report of the other, which is much more lengthy, and in which my own work should be connected with that of Dr. Chapin of the Springfield Board of Health, we propose, if it is the pleasure of the officers of this Association, to bring before you at some other time when we shall have the whole session to ourselves; as it was a particularly trying epidemic, and, as we believe, one remarkably instructive, showing the difficulties in the way of such an investigation. The one of which I am going to speak now was a comparatively simple one, and yet at one time it looked very puzzling.

In the last week of August there suddenly appeared in the city of Somerville quite a number of cases of typhoid fever among some of the best citizens. The physicians who had these cases in charge reported them at once to the Board of Health—a most exemplary proceeding, and one which might well be imitated by their brethren of the medical profession all over the state, as you doubtless know, but one which is not, unfortunately, as often imitated as it might be. The local Board of Health investigated at once, and learned that these people all had the same drinking water, namely the Mystic supply, against which a good deal has been said from time to time. The Mystic supply is undoubtedly polluted with the refuse of certain tanneries, etc., to some extent; but if any one will take the trouble to look at the figures he will find that Chelsea and Charlestown and Somerville have not suffered inordinately in the last few years from typhoid fever, which is perhaps the best measure that we have of the contamination of a water supply with human excrement.

The local Board of Health also found that these people had, or at least a large number of them had, the same milkman, and that, of course, was a very significant fact, because in Somerville there is a large number of milkmen.

Meantime the cases continued to increase and to be reported, and the local Board, finding itself with rather more on its hands than it could attend to, very wisely applied to the State Board of Health for assistance. The State Board at once began a systematic investigation, and found right away that there were more cases than had been reported. A card was sent out requesting physicians to report at once, and a number of cases were learned of in that way, with the result that, at the end of a few days, it became apparent—in fact, it became apparent almost at once—that there were about thirty-five cases of typhoid fever in Somerville which had come down nearly at the same time. These cases were located for the most part in that part of the town known as Central Hill, not very far from Union Square, between that and the City Hall. A large part of the city of Somerville showed no typhoid fever whatever. There had been no typhoid to speak of during the summer; one or two cases a month, but no more than we have learned to expect in towns of that kind; not as many, in fact. The number had been low. Here, then, were a number of cases of typhoid fever in the best part of the town, in a hilly part, severe cases; and a study of the dates very soon showed that a number of them had come down at the same time. It appeared that on the sixteenth of August there were six cases attacked, on the seventeenth two or three, on the eighteenth three or four, and on the nineteenth half a dozen and so on; but that the whole thing was over about the twenty-sixth of August, which was somewhat before the time of the beginning of the investigation.

On putting the cases on a map it appeared that they were clustered for the most part around the hill. There were, however, a few exceptions. Upon the map which is at the other end of the room, I have indicated with the black dots the position of the cases which occurred in the city of Somerville between the twentieth of August and the tenth of September. During those twenty-one days there were thirty-five cases.

reported to the Board of Health, or learned of; one of these was an imported case, which came from Charlestown, and had not come to Somerville until it was well known to be a case of typhoid fever. Another one was a plainly secondary case. A third was a very old case tardily reported. So that there were thirty-two cases, we may say, remaining to be accounted for

Investigation showed that thirty of those had the same milkman, and of course it was evident at once that the milk was the common bond of connection, for they had nothing else in common, except their air supply and their water supply. But their air supply and water supply of course were shared with all the rest of Somerville and that whole region. There could be no question there. On looking into the route of the milkman it was found that all the cases lay within his district. All the cases, curiously enough, even the imported and secondary case. I have indicated by the red line on the map the extreme boundary of the milkman's route. Of course he did not serve nearly all the people within that red line, but it is very significant that during those twenty-one days there was not a case of typhoid fever in the city of Somerville outside his beat, or outside of the red line.

Having concluded, then, that the outbreak was probably due to the milk, the next thing was to find out what the trouble was with the milk. Dr. Abbott first, and I afterwards, visited the farms in Littleton from which the milk was said to have come, and from which I believe that it did come. We found these in excellent order, unusually good farms. There was evidently no trouble there, although there was a possibility of some trouble at one of the houses. A woman was sick with typhoid fever, but on getting the date of her illness it turned out that she was attacked altogether too late to have had anything to do in the way of causing this epidemic, and it was evident that she had had no connection with the milk. It was a very obscure clew, if it were a clew at all, and the

absolutely proved that her case could have had nothing to do with this particular epidemic.

We were, then, of course, confronted with this state of affairs: The milk evidently caused the epidemic, because here were thirty out of thirty-two cases undoubtedly having this common bond of connection and no other bond, coming down at the same time. We were driven, I say, to this. The milk was the cause, and yet the milk, when it arrived in Somerville, was all right so far as we could learn. It was evident, then, that if it got contaminated, it must have got contaminated while in the hands of the milkman. The story of the milkman with regard to the treatment of the milk was long and interesting. Substantially it was this: The milk arrived on the train at ten o'clock in the morning. All of the milk was taken to the milk-house, which is shown by one of the red squares on the map, the upper one, in a certain part of the city, and there it was, so the story went, "mixed" and "set up" in the little cans. Having been brought in in the eight and one-half quart cans, it was there mingled in a mixer, having first been strained through two or three sheets of cheese-cloth, and was then drawn off at the bottom of the mixer by a tap into the small cans which were to be delivered to the citizens. After this these cans were put in a cooler and allowed to remain standing upon ice and covered with ice, securely plugged, of course, until they were delivered, on the following morning.

The milk was delivered by two distinct milk-men, and on comparing their routes it appeared that there was about as much typhoid fever on one route as on the other. The problem then seemed to be what could have happened to the milk at the milk-house. Before this I had learned that the son of the milkman was himself affected with typhoid fever, but his case was one of the last to be reported, and I had at first supposed that he merely shared in the common misfortune. He was supposed to have drunk of this milk, and it was not at all strange, so it

seemed, that he should have had typhoid fever. It turned out afterwards, however, on more close examination, that he did not consult a physician until very late in the disease. The day after he consulted his physician he had a tremendous hemorrhage, and there was no doubt, from the intrinsic history of the case, that he had driven his milk wagon long after he ought to have been in bed. There were certain reasons for this which I need not enter into, reasons of a more or less private nature. Of course it was not the fault of the milkman that this outbreak happened, so far as I know, at any rate; it was his misfortune; and I have in my possession certain facts which enable me to state positively that the man had undoubtedly had typhoid fever for some time. He soon after died, and the history of the case was as clear as it could possibly be.

There is no doubt, then, that one of the milk-men had typhoid fever, and that he had it at a period early enough to have infected the milk, if we will allow that the infection could have occurred early in the disease. The objection was at once raised that this man had never himself handled the milk. It was alleged that his duty was the washing of the cans, and that he had never himself come in contact with the milk in any way. His brother had always done that, so the story went. But I carefully examined the milk-house, went in detail into the ways in which they "set up" the milk and so on, and all I can say about that is that I don't believe it. I believe that when two men are working over milk in one room there is not such a strict division of labor that one man always and without exception washes cans, while the other always and without exception puts the milk into the cans. At the same time I, of course, had no positive proof of that unless we except the result.

The circumstances, then, were these: Here was a man with incipient typhoid fever working near if not over milk, and handling it, as I believe, handling the cans at any rate and delivering the milk. As I have said before, both routes had

typhoid fever. I believe, therefore, that the contamination took place during the mixing and not during the delivery. If it had been during the delivery the cases should have been confined, of course, to the one man's route.

There was another objection, however, and a more serious one, raised against my theory. If you will look at that map, those of you who are near enough, you will see that the cases are concentrated pretty well upon Central Hill, that is, comparatively near the milk-house. Now these men delivered a considerable amount of milk in another part of the town nearer the railway station, and their route even extended just over the line into Cambridge, where they served three families. When I found that out I communicated with Mr. Farnham, and learned that there had been a few cases of typhoid fever in Cambridge, and that one of the cases reported in Cambridge was located on the street supplied in part by this milkman. He supplied only three houses there, and you can imagine the interest with which I visited the street to see if the case reported there was supplied by the Somerville milkman. And to my delight, when I got there, I found that it was; that that was one of the three families in Cambridge taking milk from this man, and the only house in that neighborhood that had any typhoid fever. There was another case off in a remote part of Somerville, and there were several cases on the flats away from the hill, enough to show that the fever was not strictly confined to the hill, yet it was evidently in excess there.

How, then, were we to account for this uneven distribution over the routes? That for a long time was a great puzzle, and it was, of course, constantly urged by the milkman as a reason for believing that the milk was not at fault, until, on one fortunate occasion, in endeavoring to confute another branch of the theory, I learned some interesting facts. It seems that when the milk arrived in the city it was the custom of the milkman not to take it *all* directly to the milk-house. For a long time I

had supposed that that was the custom. I had been told so distinctly, and have my notes to that effect, made in a very prolonged interview. But it seems that that was not the custom; that the custom really was this: When the milk arrived in the city one member of the firm was at the station with a wagon which he loaded with milk fresh from the country. He then waited about that part of the town until the peddlers arrived in his vicinity. Then, if they wanted any milk, if they were short, he supplied them with fresh *milk which had never been to the milk-house*. And you can see at a glance that that was a very good system; because suppose that to-day they sold out everything they had, both old and new, or nearly everything, they then carried some over in the milk-house to begin with to-morrow, but always kept less than they thought they were going to sell; in that way they never had any really old milk on hand. In the morning one member of the firm would go to the train and load up with new milk to supply any deficiency; and it is calculated that in that way they never carried over an excess of milk to the second day, but drew on to-day's supply to make up their needs, and on to-morrow's for the next day's needs, and so on. The result of that would be that nearly every day, and probably every day, a considerable number of cans of milk were peddled which had never been to the milk-house at all but was taken directly from the train and put on the wagon of the third member of the firm, carried about until he met the peddlers, and then by them delivered fresh to their consumers.

The moment that point was learned all became clear. It was then easy to see why those particular parts of the city near the railway station, and which were much less desirable parts of the city, though served by these men, had not had typhoid fever. It was because the milk which they got had come straight from the farm and had never been "set up" at all. It had not been to the milk-house, it had not been worked over; and I learned that the amount was large.

Putting all these facts together, there was no doubt in my mind, and I think the conclusions have been generally accepted, that the real state of affairs was this. A man sick with typhoid fever was working over a part of the milk. He was in the incipient stages, and probably had — I know that at one time he had — diarrhoea. There was no privy at the milk-house, but there were cow sheds and stables near by ; and it is very easy to see how, a sudden demand having been made upon him, he may have retired to one of those places, and, without proper paper may have contaminated his fingers, and have returned to his work without proper washing ; either going on washing cans, on the theory alleged by the milkman, or “setting up” milk and drawing it out, on the theory which I hold. At any rate, the moment that that young man went to bed the epidemic entirely ceased, and the moment he stopped having much to do with the milk it very much diminished. I have no doubt whatever that that was the real cause of the difficulty, and that the thirty-two primary, indigenous cases which occurred in Somerville in the latter part of August and the first part of September of last year (1892) were really due to milk infected by a sick milkman ; and we may say, if we choose, that as a result there were four killed besides twenty-eight wounded.

It will give Dr. Chapin and myself pleasure at some time, with permission of the State Board of Health, to tell you of an epidemic in Springfield in which twenty-five were killed and one hundred and twenty-five wounded. The present report also is made by permission of the State Board, which has conducted the investigation, and which proposes in the near future to publish a detailed account of the whole affair with maps and diagrams.

It seems to me that perhaps the most striking point of all is this : that it is possible to account for very nearly every case of typhoid fever in a city ; sometimes, at any rate ; not always, perhaps. But in this case you see there was not a single

example of typhoid fever in Somerville except in this district, and we accounted for every case here except two. One of those was a case in which the diagnosis may possibly have been at fault. It was an old case, and there was a possibility that it was a secondary. The other one was the case of a young woman who was in the habit of buying milk at a certain bakery. The bakery next to the one from which she got milk was supplied with milk by this particular milkman, and from that bakery two or three of the cases hailed. I could never get this young woman or her mother to admit that she had been in that other bakery. She swore positively that she never had. But as she had to pass it to get to her regular bakery, I could not help feeling that on some occasion she or some other member of the family had, unthinkingly, perhaps, stepped in there and got some milk. Her case coincided perfectly with the rest in date. At the same time, I have rejected it from the cases which I consider explained, and consider it an unexplained case.

But taking those two out, we have, out of the thirty-two, thirty cases primary and indigenous, connected with that one milkman; and, as I say, the moment that this young man went to bed the whole thing stopped. There were other cases of typhoid fever, afterwards, in Somerville. One was a very violent case that came in just after this, and it was urged at once by some that here was something that was not explained. A very little inquiry showed that the young man had come home sick with typhoid fever from some watering-place, and that Somerville had not had anything to do with it.

Of course there comes an end to all of these things. One cannot be investigating continually in any one town, and there were cases afterwards which I know nothing about. But from the twentieth of August to the tenth of September there were only these two cases in Somerville which could not be satisfactorily explained, although there were thirty-five cases in all. (Applause.)

THE PRESIDENT. Prof. Sedgwick's very interesting paper is before you now for discussion or question. I hope the Association will yield gracefully and discuss it without insisting on the President's calling upon its various members. If not, I think Prof. Kinnicutt might have something to tell us.

PROF. KINNICUTT. I think I am almost the last man that should be called upon to say very much upon this subject, as I am not a bacteriologist. One thing Prof. Sedgwick has shown most clearly, and that is how much can be discovered, and how much good can be done, by such an investigation when carried out in a scientific spirit. It seems to me, that Dr. Sedgwick has shown beyond question, the cause of this epidemic of typhoid fever, and it has been one of the most instructive papers I have ever had the pleasure of hearing.

DR. B. F. DAVENPORT. I have listened with great interest to the paper and am not surprised at the results which are obtained. It having been my fortune to be at one time the milk inspector for the city of Boston, I have had occasion to examine milk somewhat, and I think few who have not had such occasion have any idea of the filthy condition in which much of our milk comes into the city. If one will, in the city here, or any large place, visit the house of any large dealer where milk is put through separators, he will be astonished at what he finds upon the filtering screens. Up here on the Albany Railroad where there are several large separators working every day, I think he will hardly at any time find less than a pint or quart or so of anything but appetizing material, dirt, cow dung and everything else upon the screen; and why we do not have more typhoid fever is simply that a kind Providence intervenes.

When I was inspector for the city I became aware of these facts, and endeavored to break up what I consider the pernicious custom of the milk trade of Massachusetts in serving their milk to families in small cans filled the day before. It is peculiar to this locality, and prevails nowhere else, that I know

of. Everywhere else, the country over, it is served out of large cans into containers furnished by the receivers, and generally by the use of dippers or ladles. There are certain cars which come into the city early in the forenoon, from which the milk is taken and served directly to families, and it ought all to be done so. Because, although farmers are human like the rest of men, and though some of our worst samples of watered milk have been taken directly from the farmer, yet the proportion of watering and tampering with milk is less with the farmers — at least, it was — than with the city milk peddlers, and I believe that the greater proportion of the trouble with milk occurs in the cities in the “setting up” of the milk. As the milk comes into the city in the morning, it is yesterday’s milk; and this morning’s milk, which as the phrase is, is “set up,” and served out to-morrow. It is thus in the third day of its age; and in a majority of cases, unless care is taken, it will hardly keep the next twenty-four hours, which is not to be wondered at.

I think this question of looking into the cleanliness of the cans and the stables is fully as important a question as that of the simple watering of the milk. Were it not for this introduction of impurities with the water, the mere fact of watering, except where it is to be used for children, would not be so material a question as it is. For pure water would only dilute the milk, and we could drink more of it and thus make up for this. As the watering is done on the sly, the peddlers do not always use the best water. They take such as is most convenient for such use, and this may be very impure. Such water being put into the milk, and allowed to remain there twenty-four hours, until the serving out the next day, will give ample time for bacteriological growth to set in. (Applause.)

DR. GARDNER SWARTS. I think the subject introduced by Prof. Sedgwick is most interesting, and one which leads me to see the particular needs of the State Boards of Health or the city Boards of Health in investigating all cases of contagious

disease ; in other words, having thorough knowledge of the contagion which is going on at the time ; to make a record daily of every case which is reported by the physicians — and there are, I am pleased to say, with us in Providence, very generally reported — a record of all cases of contagious disease, of course including typhoid fever. In that way we are enabled very quickly to determine not only whether there is an epidemic, but also as to the source or cause of the epidemic ; as to whether it was the water supply of a given locality, whether it is among the members of certain families, and whether, as is sometimes the case, it is connected with the milk supply.

About four days ago I ran upon three or four cases of typhoid fever which had suddenly appeared on one milk supply. I have not yet had time to ferret it out, to see the cause of that particular epidemic. But about two months ago an epidemic appeared in a certain portion of the city, the families being supplied by one milkman who had but few cows ; but every one of the families supplied by that milkman had typhoid fever in their families. In addition to that, the son of the family, in fact, the one who did the milking himself, had typhoid fever and died of it. As I say, it is important that investigations be kept up in this way and the conditions brought to light as quickly as possible, in order to be of benefit.

It recalls to my mind the experience I had in an epidemic about four years ago in the town of Bristol, R. I., where there were ninety cases of typhoid fever. Those ninety cases were supplied from a common milk source. I was called by the city council at Bristol to investigate the matter, the State Board of Health being a little slow in their action. On making the usual investigation as medical inspector, which I did, I came to the conclusion very quickly that this one source of supply was the cause of the trouble.

That was, of course, assisted somewhat by there being cases of typhoid fever and deaths in the families supplying the milk ;

other cases occurring in the family and going to other portions of the country with the disease and disseminating it. But I met the same difficulty that Prof. Sedgwick did, in getting every case connected with the milk supply, and was puzzled for a while in that way, until, having traced the milk into the stores, I discovered that naturally, the town being small, the inhabitants became aware that this particular individual was supplying contaminated milk. Therefore they ceased to take their supply from this milkman.

As a result, he had more milk than he could dispose of. As the town was receiving only a certain amount, naturally that amount became less because the new customers of the other dealers demanded more milk; consequently the new dealers, being out of milk, must needs get a supply. Therefore within three or four days the man with contaminated milk not only disposed of all of his milk, but could sell more to these dealers who were out.

Furthermore, there was another thing which shocked me greatly. I was very much pleased with the means one of the men had of distributing, that is, the milking of the milk through an artificial teat into bottles, allowing no dirt to contaminate the bottles. This delighted me so greatly that I followed it up, and found, unfortunately, that this man was in the same condition as the others, that he was buying the contaminated milk and filling the bottles. So that before I got through the confusion became somewhat cleared, and there were but two or three cases but what could be directly connected with this supply. I think it is of great advantage that this can be given to the public. My report upon that was, unfortunately, brought back to the city council, and was locked up securely in the safe for the sake of the commercial interests of the town, and has consequently never seen daylight. But it is important, I think, that most of these cases be brought up, inasmuch as the public will put up with a certain amount of filth. They know that the

farm-yards are dirty, and the milk is dirty, but being in the habit of drinking dirty milk they will put up with it some time; but when it becomes a question of disease and death they take more interest in the matter. And the more epidemics from this source that can be brought forward to the public, the sooner will they assist the boards of health by giving the boards of health money and legal authority to control all these supplies.

THE PRESIDENT. Dr. Chapin, I think we can hear something from you, and you will still have something left for the next meeting.

DR. CHAPIN. We had a very hard time in Springfield for a little while, but I do not know as the Association cares to hear anything about that to-day. The matter is not entirely ready for report. The one thing that is left upon my mind by the work done there, is, that a board of health ought not to lose twenty-four hours in looking up a case of typhoid fever. There is a good possibility of finding out within twenty-four hours what the trouble is, and of instantly remedying that trouble. Twenty-four hours may mean twenty-four cases of typhoid fever, and the duty of the board of health is very clear.

DR. SWARTS. I should like to ask Prof. Sedgwick if any bacteriological examinations were made of the milk?

PROF. SEDGWICK. No.

DR. SWARTS. In the epidemic spoken of, I made examinations and could find no bacilli. I did find, however, an organism found in boggy, marshy lands, called the "root-like bacillus." Furthermore, the epidemic called typhoid was a sort of a mongrel type, and it has been a great question to my mind, many times, whether or no we have not a disease simulating typhoid fever which may not always be due to the ordinary causes of typhoid, but due to contamination, as, for instance, sewage contamination, which can readily occur in diluted milk, as has been suggested by Prof. Davenport.

The point which I wish to bring out in the case is that the

other organisms found in sewage and in contaminations from fœcal discharges will produce symptoms — at least, we are beginning to believe that they will produce symptoms — which are about the same as typhoid fever. And while bacteriology is not necessary in either of the epidemics spoken of here, yet it would be of great assistance if it could be followed up in every epidemic.

THE PRESIDENT. Is there anything else to be said upon this subject? If not, I am sorry to say that there has to be a deviation from our printed programme, since Mr. Hurlburt of Lynn is unable to be present this afternoon and read the paper which he had promised upon "Legal Powers of Boards of Health." But, very fortunately, Mr. Bailey has very kindly consented to speak to us this afternoon upon that same subject, and without much preparation. Of course the whole thing is a matter of A B C to Mr. Bailey. We appreciate, however, very much his kindness in being willing to fill the gap this afternoon. I have now the pleasure of presenting him to you. (Applause.)

MR. BAILEY. Mr. President and Gentlemen: I find myself in a predicament, because since the time I promised my friend, Dr. Durgin, I would be here, when all I presumed I should have to do would be to criticise somebody else's work, I have found myself so busy that I have been unable to even look at the statutes. But still, as you say, we have had some experience with health matters in our city, and a little experience, at least, in some of the difficulties, and I certainly can say I appreciate the *want* of legal powers in boards of health.

There is one radical defect in our health laws, as I understand them. Probably in the city of Boston we are more unfortunately situated than in any other town or city, certainly than any town. In Boston no board, not even the Board of Health, can expend money beyond its appropriation. The Board of Health of the city of Boston is limited to the express appropriations of the City Council, and the appropriations which it has

are so defined that the board can expend them only for the particular purposes designated. Therefore you see the power of the Board of Health is very much limited. In towns I do not think that limitation is applied. I think the boards of health in towns can go on and remove sources of disease, where in the city of Boston they cannot. Now, in the present state of the financial laws of the Commonwealth limiting the amounts which cities can expend or can raise by taxation, the demands for the different purposes for which money is required are so great, and there is such a contest for them, and as often the money which may be needed to protect health will be needed only on contingencies, the city councils are averse to extending or increasing or giving proper amounts for the boards of health. Again, while the law contemplates that the party who creates a nuisance or who has on his premises a nuisance, or is doing anything that may injure the public health—while the law contemplates that he shall pay for the removal of the nuisance, there is no way of enforcing the collection other than by suit, in the great majority of cases of no value, and therefore there is no return of the money to the public treasury.

Now, it has seemed to me, in talking over these difficulties with the board of health of our city, that if the city council of a city, or the people of a town, knew that wherever a nuisance existed on the premises of a person, and money was expended to remedy that nuisance, that that money so expended should be a lien upon the property on which that nuisance was found, so that it would inevitably come back to the city, the city or town would not be so averse to appropriating money. They would feel that the money expended was so much money practically loaned by the city or town to the owner of the premises, to remove the nuisance, and he would be obliged to pay the money back. Then the money would come back, and the city or town would have it to use for other purposes.

We certainly would remove a great deal of the objection which is found in our cities and towns to appropriating money for the boards of health if we could thus secure its repayment.

We succeeded one year in passing this law through the Senate; in the House it was killed. Now, all of us have a fear of what may transpire this coming year, and if we can only have such a law to fall back upon, so that we can say to cities and towns, "You need not be afraid to give the boards of health this money, because, if you do, the money expended will be a lien on the real estate on which it is expended, and it will come back again," — we feel that that will be a great help. Therefore, I suggest, and I ask that all these gentlemen present, if they approve of this, if it strikes them with the same force that it does me — that it will be such an inducement to cities to appropriate and give the boards the money to spend — I ask that they will use their efforts with their representatives to get this law passed.

Now there is another difficulty. It seems to me that anybody who is disposed to fight the board of health in any matter can prevail at any time. I know people have an idea that the powers of the board of health are great, but they are a good deal like the signs which you sometimes see in the country, "Look Out for the Dog." Anybody acquainted with the premises, knows there is no dog, but a stranger, not knowing it, keeps away. So it is with the great majority of our people. When the board of health tells them to do a thing, they have such a fearful idea of the great power of the board of health that they will do what the board says, and the board accomplishes its desires simply by the power of that idea.

In the first place, what is the power of the board of health when they find a nuisance existing on premises? As I understand the law, an adjudication must be made. Say that it is a certain amount of stagnant water, and the nuisance is prejudi-

cial to the public health. The board directs the owner to abate it, and he doesn't do it. What can the board do? You say, "The board can go on and abate it." Certainly it can; but you have got to take the city's money for it. The board of health is limited in its money, and it is not going to sacrifice a whole year's appropriation on one nuisance, with a very dubious prospect of getting it back. Therefore, it will be a long while before the board spends its money to abate this nuisance. Then the board can get out a warrant against that man, and the fine, I believe, is twenty dollars a day — something like that — for every day. Well, what do you do? You make an adjudication that the thing is a nuisance. Now it is popularly supposed that this adjudication is a stronghold for all local boards. It is popularly supposed that an adjudication of the board of health is sufficient; if the board says that a thing is a nuisance, it is a nuisance, and that is sufficient. Now I am, unfortunately, not of this opinion. I am afraid that when it comes to be tried you have got to prove that there is a nuisance before you can convict that man.

That is what it seems to me is the law. The Supreme Court of this state has never decided that question. They have intimated, I think, in a case where the city of Salem abated a nuisance on the premises of the Eastern Railroad Company, and then undertook to recover the money for it—the Court rather intimated that two questions would have to be settled in a suit of that kind. One was whether there was actually a nuisance, and the second one was whether the nuisance was caused by the railroad, in order to hold the railroad liable for the money expended in abating it. So, of course, as against the popular idea that if a nuisance exists upon the premises of a party, he is bound to abate it, there is this question of who is to bear the expense. The Court rather intimated in that case that the party was bound to remedy it; still, if he doesn't do it, and the city or town starts to do it, it intimates that they doubt

whether the city or town can recover against anybody than the one it proves to have actually caused the nuisance. So you see there is a difficulty there, and boards of health object, and rightly, to expend money under these circumstances.

Now I say that the time has come when it ought to be settled whether the adjudication of the board is final or not. I am anxious to see a chance where we can raise the issue, and get a square case. I am anxious to have it determined whether that is the case or not. At least it should make a *prima-facie* case, and if the board adjudicate that there is a nuisance, it should be for the party on whose premises it is adjudicated to exist, to prove that it is not a nuisance. Certainly the law ought to go as far as that. I believe it should go farther, and I believe the law should be so, that if a person refuses to comply with an order of the board of health a fine should be put upon him. New legislation, which our board has asked for, will greatly assist to remove this difficulty. It has asked that a board of health shall have authority to apply to the Supreme Court for an injunction to stop a business deemed by the board to be a nuisance, that the power should be given to the Supreme Court, on the petition of the board of health of a city or town, to require the owner of premises to abate any nuisance existing on his premises, or to cease carrying on any noxious occupation or trade. The result will be that if the board of health represents to the Court that a trade is of such nature, or that a nuisance is of such an extent, than an injunction, pending the settlement of the case, should be issued, the Court can issue it at once and the man must stop. On the other hand, if it is a case that can be allowed to go on, evidence can be introduced in regard to it, and the Court can either issue a temporary injunction or not, as it deems best in the premises.

Now there is another power that we are going to ask this year from the Legislature, and while it applies only to the city of Boston, inasmuch as all you gentlemen in this Common-

wealth are interested, I take it, in the city of Boston, and especially in its health,—because if we get disease here it must certainly travel to some of your homes—we ask you all to help us in what we are going to ask the Legislature to provide: That any person owning flats or land over which the tide ebbs and flows, shall be compelled, on the order of the board of health, in any case where they deem it proper so to do, to so dredge and fill that land, either by dredging from one part and filling up the other, or, in some way, that no part of those flats shall be exposed at low water that is not exposed at high water. It is a pretty radical measure; but I believe, gentlemen, that there is no source of disease in a large city surrounded by water, and where there is a large acreage of flats, as here. I do not believe there is any source of disease so great as that, and I believe there is no health regulation that can be passed that is superior to what that will be. Of course you may say it is, perhaps, a hardship on the man that owns acres of flats. I cannot help it. No man has the right to use his property to the detriment of his neighbors, least of all to the detriment of the whole public, or to so maintain it that it will become a nuisance and source of disease.

Under this act, of course, the owner of the flats must change the condition of them in some way, and it is not so expensive, after all, because often merely dredging from one place and placing the dredged matter on another, will do all that is required in the act. We hope you gentlemen who are interested in the city of Boston will suggest to your representatives to help us out in this law.

There is one other thing that is about in the same line which we are going to ask for. Most of you know that there are numberless small creeks or inlets that were formerly branches of the sea, that have been cut off from any connection with the harbor, open water spaces which have really become stagnant and contaminated. We are going to ask that every person owning any

lands in the city of Boston, constituting such places, shall fill them to Grade 12, one foot above mean high water. It is the grade established by the Legislature, below which no cellar can be built in the city of Boston. Now if no cellar can be allowed in the city of Boston, except in some special case, below this grade, we hold it is no hardship upon the owner of any lands that he is compelled to fill it up to that grade, and not keep it to be a sink-hole, or hole where sources of danger to the community will lie.

While, gentlemen, I have briefly indicated where I think the health laws are deficient, I want to assure you that there is a power which boards of health have, and sparingly use. We have used it in Boston a great deal, and it is the strongest power which can be used, and that is the power to make health regulations. Just as city councils have power to pass ordinances for the common good, reasonable ordinances for the common good of the public, and as towns have power to pass by-laws, so boards of health have power to pass certain regulations, and those regulations become laws, for the violations of which, penalties can be prescribed within certain limits. And while, as a general thing, the courts discourage continued prosecutions, still I do not believe a court will be found, where a party is prosecuted two or three times for maintaining a nuisance, that will ever turn round and say, "He has paid a fine for that offence and he should not be tried again." Wherever continued prosecution is made for a man's maintaining a nuisance, I believe there is not a court in this Commonwealth but will enforce the penalty without complaint, to the full extent, every time.

Now this is the strong power, in my judgment, of the boards of health to-day, this power of passing health regulations. There is hardly any conceivable limit to their power in passing them. We tried it here in our city in a case in point, which you will see was certainly an extreme one, and which seemed almost

farther than we could go. Certainly the Board of Health and myself were much laughed at for drawing up the ordinance. We have, as probably all of you gentleman have, in your large cities, great trouble from the private passage-ways of the city being kept in an unclean condition. It would be impossible for any city or town, especially the large cities, to appropriate money enough to clean all these passages. The only way we can do, under the statutes, is to prosecute the person on whose land the nuisance is, and you see we cannot prosecute unless we can prove who the owner is, a very great difficulty in many cases. So between us we got up an ordinance to this effect: That any person owning or occupying any estate abutting upon a private passage-way should not permit any nuisance or waste or stagnant water to stand upon any part of that passage-way adjacent to such estate. That is about the substance of it. Now you see that is going pretty far; that one shall be compelled to go out into his private passage-way and remove any nuisance which might happen to come there or be put there by anybody, whether he owned the premises or simply occupied them, and yet it is no more than every owner or occupier of property should do.

When it was passed it was very much discussed by the lawyers here, and we were made the subject of quite a little ridicule. We said, "All right, we can stand it for a while." I am happy to say that the first person we tackled on it had the courage and money to carry it to the Supreme Court, and the Supreme Court, in a decision which will really make a man feel good to read, sustained us, and not only sustained us, but gave us the courage we wanted to pass some even more stringent.

I think, gentlemen, I have shown you some of the deficiencies in the power of boards of health, and I thank you for the opportunity you have given me to show them, and I earnestly bespeak your kind services in the amendments our Board is seeking. (Applause.)

The PRESIDENT. I am very sure I express the sentiments of

all present in thanking Mr. Bailey very much for the exposition of these things, which come very close to us all. We shall find it of very great service. Among the gentlemen who have kindly consented to say something this afternoon, I find the name of Mr. Lincoln, of Brookline, whom I now present to you.

MR. LINCOLN. I do not know but what I am in a somewhat worse predicament than my Brother Bailey in regard to the discussion of this question. As a matter of fact, I knew nothing of the intention of Dr. Durgin to request me to speak until I saw my name in print, and the preparation for a Brookline town-meeting which occurred last night — and if any of you are familiar with Brookline town-meetings, you will know what that means — has taken about all the leisure that I possess.

Furthermore, gentlemen, of course we all know that it is not the practice of Boards of Health to go searching around for the law to back up their acts. We learn our law very much as the amateur sailor learns where the rocks are in the harbor — by running against them.

In the town of Brookline, I am happy to say that we have had very little occasion to call into effect even the laws which Brother Bailey thinks are perhaps a little inadequate to the purpose. There have been some things done in the town which I think it would be pretty difficult to find legal warrant for. We had a territory some time ago which was called the “Marsh,” and it was a very unsanitary and disagreeable place. At that time the Board of Health consisted of physicians, who are somewhat of a law unto themselves, and they determined that that marsh should be improved, and in some way or other they got it improved. The marsh level was raised. They had a statute passed which required that after the passing of the statute no cellar should be placed below a certain grade, but it did not apply to buildings already existing. They went to work, however, and through the respect and awe which the name of the Board of Health creates in the minds of most people (and I’

think it would be very unwise to give away that source of our power by the publication of what Brother Bailey has said on that point), they succeeded in having nearly all the houses raised, and the land about them. Then came, as a consequence, the drainage of those houses, and some of them proceeded to drain into cess-pools. Of course, being on marshy land, that was very inadequate, and only repeated the evil which already existed, and it was necessary to put in a sewer, which was done. Then it became necessary to require that the houses should be connected, and I think that was before the law which has since been passed giving authority to Boards of Health to require houses to be connected with sewers. But the Board of Health did require certain houses to be connected with the sewer, and, the owners not complying, they undertook to do the work themselves. They employed one of the best masons in town, and of course they left the work to him.

The case only goes to show the importance of employing proper agents and of overseeing the work, because, in these cases, which are reported in the 151st Massachusetts, the Court held the Board of Health responsible for the acts of the agent; and, unfortunately, the man sent to do the work got into a quarrel with the men owning the houses, and the work had to be done in rather a slow way on account of the difficulties encountered. The result was that a suit was brought against the members of the Board of Health, and I am sorry to say that the Court decided against us, largely because the jury found that the agents of the Board of Health did not act in good faith in the work which was done. But it was pretty hard to see in the facts reported what want of good faith there was on the part of the Board of Health themselves.

Now, that was our unfortunate experience, but so far as I know, that is the only litigation that has arisen affecting the town of Brookline through the acts of the Board of Health. Since that time the Board of Health of the town has been the

selectmen *ex-officiis*. The selectmen appoint as an agent a physician of the town of the best standing, and we simply carry out the recommendations of that physician. We find that works the best way. We have always been very fortunate in having a physician who has taken a lively interest in the health of the town, and are fortunate to-day in possessing Dr. Chase, who is present, as our agent. We do little more out there than carry out what he recommends.

Now I am very glad that the Association has voted to-day what it seems to me might have been done earlier. If I understand the vote which was passed, it is that a committee shall be appointed to consider what further powers are needed by the boards of health, and to secure the proper legislation therefor. It seems to me that will be an exceedingly useful committee. For all ordinary cases, as I look at the statutes and read them, it seems as though boards of health had ample powers; but the difficulty that has been suggested by my Brother Bailey, and the chances of a suit against the officers personally, which actually occurred in Brookline, shows that possibly something more is needed; and that I think the committee which is to be appointed at this meeting will do its best to obtain.

We have the advantage of being a suburb of Boston, and we always take occasion to profit by their experience. The moment they pass a regulation which experience proves good, we adopt it; and that accounts perhaps, partly, for the good sanitary condition of our town.

I must apologize for not being able to enter more largely into the consideration of this question, for reasons I first stated. I came hoping that the paper of Mr. Hurlburt would open up some matter for discussion which possibly I might speak upon. (Applause.)

MR. BAILEY. It has been suggested to me that I might give a parallel case to what Mr. Lincoln has just suggested. Our

own Board of Health has been the victim of a similar suit. The Board of Health of the city ordered a certain nuisance in the South Bay to be done away with, by putting a dam across from an island that was in the middle of the bay to the shore opposite. The owner was a man who used this place for a spar-yard, where he kept his spars and logs, being a contractor, and he was deprived of the use of it at certain stages of the tide. He brought suit against the city of Boston, and the courts said, "No, it was not the city of Boston, it was done by the Board of Health." He immediately brought suit against the Board of Health personally. I am sorry to say that it was found that the Board really had no authority to take land for the purpose for which they had taken it there, practically; and therefore the Board of Health were found liable and had to pay the money for the trespass which they had committed; although I am happy to say that the city stepped in manfully and did not allow the members of the Board personally to pay it out of their own pockets, it only shows the difficulty which boards of health find in extreme cases, or in cases where they find that something must be done and undertake to do it.

Now you see if, instead of proceeding in that manner, we had a law which allowed our Board of Health, as I said before, to bring a petition in the Supreme Court before the judges sitting in equity, to enjoin the maintainers of that nuisance, the result would be, as I said, that the Court could immediately grant the injunction. The Board of Health is then subject to no such liability at all. Besides all that, the party immediately has an adjudication in the quickest manner which the law could possibly provide. He has an opportunity to have the question of whether he is maintaining a nuisance adjudicated, and if he is or is not he immediately knows his rights, and must at any rate conform to the will of the Court.

The PRESIDENT. Several other names appear upon the list, but I am afraid that none of them are present. Mr. Rackeman,

of Milton, I presume is not here, nor Mr. Washburn, of Melrose. Perhaps some doctor who has served upon an active board of health will give us his impressions as to the laws of Massachusetts. If I cannot get a doctor I certainly can get Brother Whitney. I will now present to you Mr. Whitney, of the Cambridge Board of Health.

MR WHITNEY. I am called up unexpectedly, but of course there is something that I should like to know about this matter, though I am very certain there is nothing I can impart. I fear City Solicitor Bailey's remarks may possibly plunge us into difficulty. I hope the laws applying to the other cities of the Commonwealth are not as he represents them as applying to Boston, and I shall be interested to look into the laws to see if that is not true.

Now, it seems to me the proposal for an injunction by the Supreme Court would not be efficacious in remedying the nuisance. Suppose a man is in contempt of court, and suppose he is fined for not obeying the injunction of the court; there is the nuisance just the same. Suppose he goes to jail, there is the nuisance just the same. With regard to the lien power to collect, it seems to me very strange if the laws of this Commonwealth have left our boards of health so helpless. I have always supposed our boards were the right arm of the people's power to secure their self-preservation. Have they left us without any power of carrying this into effect? I cannot believe that is true, but that it was the intention we should have some power to abate a nuisance and a lien on the land. I hope this new committee will set out to see about that thing; to see if it is not true in some way or other that the people can protect themselves against a citizen who will not keep his premises clean. It seems to me that we ought to have such laws, if we have not.

I have had great respect, up to this discussion to-day, for the existing powers of the boards of health, as I have become fa-

miliar with them in their exercise, in the last three or four years in the city of Cambridge. I think last year the Board of Health of Cambridge interfered with private rights very essentially ; and after one or two hearings, at which all parties had a chance to be heard, by the simple passage of a vote they declared that the man was carrying on a business that was a public nuisance, and ordered its discontinuance. That was a business which had been carried on sixty years in one place, a rendering establishment which had become a nuisance largely from the fact that people had moved into the vicinity of the establishment, and turned it into a residential section ; and in five minutes' time, by the action of the Board and the proper notification, the owner stopped his business. He applied to lawyers, but he did not avail himself of his appeal to the Court, but instantaneously stopped his work and, of course, terminated a business which he had enjoyed and maintained, and from which an income had been derived for his family for forty or sixty years. It seems to me that illustrates the powers that reside with our boards, properly exercised.

I wish I had light upon another matter, and I hope the lawyers here, or those who have experience, will inform us about it, because it is one that affects us with regard to the expected epidemic next spring. We acted last year, and I noticed other cities did, in the appointment of emergency agents. In the emergency which was upon us our force of inspectors was not sufficiently large, and we appointed some policemen and clothed them with such powers as we thought we had to abate nuisances, as they went about. We were advised by the city solicitor that in serving processes or notification on persons where the agent found there were nuisances on their premises, it was not necessary to send a constable, but a little more care should be taken in serving the process. We did just as he said. But to-day we are confronted in the courts, before whom we carried a case, with the declaration that a person who is not a con-

stable cannot in any way serve a civil process. If that is true it seems to me we ought to know it. It is one of the difficulties before us in meeting the duties which will come upon us next year.

We have exercised this right of passing regulations ourselves and fixing the fine, and prosecuting persons for maintaining nuisances, and have found it, for a good many years in Cambridge, very efficient. We never tried the other method of spending the public money in abating a nuisance; but I can well see that it would be a very efficient thing if we could spend the public money for the purpose of abating a nuisance which exists upon any man's premises, and afterwards collect it from the estate itself if it would justify it.

Of course, there would always be that difficulty, whether the estate was valuable enough to do it.

I wish we had light upon this great question, also. It now confronts us, who border upon the Charles River: How can we abate the nuisance which exists there? In several meetings, lately, with representatives from the boards of health of the towns and cities above Cambridge on the river, they are appalled and hindered, it seems to me, unnecessarily, by a low estimate of their powers. It does seem to me that if the people of the cities and towns on the Charles River will furnish the money, there are powers enough already by statute residing in the board of health to do a great deal in keeping the river clean of the sources of pollution which come from the estates upon the banks. I wish that light could be thrown upon that question. They tell me, some gentlemen from Watertown and Newton, that they do not consider they have the right, even after notice, to go upon a man's premises to remove any existing cause of offense upon the banks of that river, such as cutting grass and filling or spreading fresh earth upon the banks. Why is it, if there is a remedy, that the people who live along the banks of that river cannot put it into operation. It is very

strange to me, if the cities and towns will furnish the money, why the boards of health cannot apply the remedy; and I should delight to see a union of the boards of health trying to treat this question. I know you will say it is being treated, that the Charles River Improvement Commission and the Park Boards are preparing extensive schemes of improvement; but they do not, to my mind, promise any practical relief in cleaning the river for the next ten or fifteen years. It seems to me there are powers enough, but what we want, of course, is to unite in some plan of operations, and then obtain the money from the cities and towns, so as to spend it and make an improvement in the river during the next few years, just as soon as the north metropolitan sewer is in complete operation. (Applause.)

MR. BAILEY. I want to speak of what Mr. Whitney has just said, that these acts of the board of health operate to scare people and therefore they will stop. This is what I said myself, but if the party saw fit to avail himself of his legal rights you would find yourselves in a very helpless condition. Take the case he has brought up, of the efforts of the Board of Health of Cambridge to get rid of a nuisance, an obnoxious business that was carried on. After the Board of Health had passed their order, suppose the man had taken his appeal to the court, what would they have had to do? The Cambridge Board of Health then would either have had to pass an order allowing the man to continue his business until the matter was determined by a jury, or else the Board would have exposed itself to the possibility of making the city liable for all damages which the man would have suffered on account of his stopping. Of course if the Board did not see fit to grant the man, by a special order, authority to continue that business, then he must stop or else his appeal would be vacated. But if he did stop, and went to the court, what would be the result? His case would probably take its ordinary course in court, and as a

general thing it would not be reached for trial before a year. That man has stopped his business, given up his business for a year, and if the jury found that he was not maintaining a nuisance, the city of Cambridge would be liable for all the damage that man suffered.

Now, I submit to you, very few boards of health have the courage to run the risk of rendering their town liable for anywhere from \$5,000 to \$50,000 damages. In our city we had a board of health that did have the courage to do it; but when we came to try that case, a case similar to the case spoken of by Mr. Whitney, after the lapse of a year I had considerable fear when I thought that perhaps we had rendered the city of Boston liable for \$25,000, which is undoubtedly the damage that the man sustained. Fortunately for us, the jury found that the man's business was a nuisance, and prescribed the manner in which the business should be carried on in a modified manner; but if it had not we should have been liable for that full amount of damage.

Now you see how powerless you are; because, I submit to you, that if it had not been a very bad case no board of health would have been willing to have exposed their town to the liability of being mulcted in that amount of money. They would have simply fined him and let him go on, and so your nuisance goes on.

On the other hand, if you go to a court sitting in equity, the judge will examine that case at the time, and if it is a case such as has been represented and it can be proved that it is such a nuisance that in the judgment of the court it ought to be stopped at once, that is the end of it, and the town is not liable for damages, nor the board of health, nor is anybody liable. If, on the other hand, the court thinks the nuisance is of such a nature that it will not work great detriment to go on, it will let it go on, and the whole case can be tried and determined within a month. That is the strong point of the case. You have not

got to wait for a year, but the court can immediately issue its injunction to stop the work, and it can at once impanel a jury. Sometimes, if it is a case where great damage might ensue, the case could be tried within a week; and you would know immediately if you are going to have a nuisance in your midst or whether it is going to be stopped.

One other point I want to suggest. I have said the boards of health of towns have the power to make the health regulation that any man owning land abutting upon a stream shall keep those lands in a clean condition. If they want to, they can provide that the grass shall be cut in August, before the time comes for its rotting. That is what usually causes a nuisance. They can make that man liable in case anything of an unclean nature arises in a case of that kind. It is in the power of the boards of health to pass these health regulations; and I consider, as I said before, that is the strongest power which the boards of health have.

DR. DURGIN. There is a marked difference between an offensive trade and other nuisances, as mentioned by Mr. Whitney. Mr. Bailey's suggestion for a lien law applies to the one but not the other. In case of an offensive trade it seems to me there is no other way so easy for a board of health as an application to the Supreme Court. In the other case if a lien law should be obtained there would be an easy process for the board of health to abate the nuisance at once, and be secured for the cost in case the owner saw fit to delay its abatement. There are two classes of people we have to deal with in securing the abatement of nuisances. One class is possibly a little timid, but perhaps more desirous of complying with any reasonable demand of the board of health to abate a nuisance, and they go ahead and abate the nuisance. The other class will look about to find some way to obstruct the board; in other words, to get rid of doing anything. They find that there is no law to place a lien on the property in case the board should proceed

to abate the nuisance. They find that in place of a lien the board has to bring suit to collect the expenses incurred in abating the nuisance, and the difficulties attending the successful prosecution of the claim, furnish them all the courage they want for delaying action.

It seems to me that if a lien law could be obtained, boards of health would find much less difficulty in securing prompt action on the part of landlords. And the city council, in my judgment, will not be called upon to enlarge the appropriations very much; for the moment the people understand that the board of health can proceed to abate a nuisance on private property and place a lien upon the property for the expense, just so soon you will find that the people will respond promptly to the order of the board of health, preferring to abate the nuisance themselves.

THE SECRETARY. I would like to ask just one question. Our nuisances are chiefly tenement houses in poor repair. Our remedy has always been to vacate the house. What liability do we run in so doing?

MR. BAILEY. I do not think you run any, so far as I am aware.

THE SECRETARY. It has always proved an efficient measure.

MR. BAILEY. Yes. There is a power directly given to the board of health, and that they enforce. I knew of one case that was tried. Whether it ever went to the Supreme Court or not I do not know. A case was tried in Essex County a few years ago for doing that thing, and the Court ruled that they carried out simply the powers given them by the statute and they could not be held liable, and the Court directed the jury to return a verdict for the defendant.

A MEMBER. Does Mr. Bailey consider that the board of health would have the right in the case of a flowage, where at the draining down of a pond and raising it in the summer season a nuisance was created,—whether the board of health

would have the right to forbid that man from draining that water below a certain level? We have a case in Brockton where a man has taken particular pains to do that. The city now has bought the premises, but I think he took particular pains to draw off the water to make it offensive and to make the city buy it.

MR. BAILEY. I think I should have tried a little ingenuity on that. I think I should have got the board of health to pass a regulation that any person owing or having control of a pond of water, who should draw off the water of that pond in such a manner as to cause noxious odors to be given off from the banks thereof, should be punished by a fine; and I think you would get him every time.

MR. DAVENPORT. There has been something said about towns making regulations. In the town of Watertown, which recently made connection with the metropolitan sewer, there were no suitable regulations made, and we could not get any regulations adopted; but with the fear of the cholera before us the board of health passed a vote that, in their opinion, certain regulations were necessary, and we proceed to make the public a code of regulations. And although in two town meetings we could do nothing, yet these were quietly accepted, and two or three hundred houses made connection with the public sewer according to our regulations.

Something has been said in regard to the towns on the Charles River having authority to do certain things. Watertown has ventured to do certain things and has ordered premises cleared up and the brooks cleared out, at the expense of the abutters; and it has been done this year where it has never been done before; and they intend to proceed to do more of the same.

MR. O'BRIEN. I should like to ask Mr. Bailey if there is not a statute now authorizing these boards of health to expend the sum of \$2,000, independent of any appropriation they might have?

MR. BAILEY. That is only for one particular case.

A MEMBER. Well, supposing they had a number of those cases?

MR. BAILEY. I think it is \$2,000 for any one case. But, mind you, that is only for one particular kind of nuisance. That is only for a nuisance where it is caused by stagnant water or boggy or marshy land. But there is one thing in that law, in the way it reads, that implies that you have authority to spend the money, because it says that the board of health shall not expend more than \$2,000 unless authorized by the city or town to spend more. I think that is the way the law reads. Of course, the implication is that that is a limitation on their powers. The board of health may go on and remedy this nuisance, and then the cost of the expense shall be assessed upon the owners of those lands, and the city or town expending the money can sue and recover. But the reading of the statute, that the board shall not expend more, leads to the inference that the board has the right to expend, but is limited to that amount. But that is the only case I know of where there is anything special said about the amount a board of health can expend. In Boston, however, our board of health is subject to another regulation, which is that no board shall expend money beyond the appropriation made.

A MEMBER. We had a case something similar to that in doing a certain piece of work. We had an order passed through the city council appropriating money for the expense of doing it before we undertook the work. The order was passed through the city council appropriating the money for the work before the work was touched. Then the assessment was made and collected with only one exception, and that was on a technical matter.

A MEMBER. I would like to ask Mr. Bailey one question. Suppose a case where a pond lies in two towns. The lower end of the pond is drawn off by the authorities, creating a nuisance

at the upper end of the pond in another town. What could you do in that case?

MR. BAILEY. It brings to my mind a similar case which arose where a man had a house which stood in two towns, and his bed happened to be in such a position that he slept partly in one town and partly in another. An officer served a summons on him one night, and the question arose whether he could serve it upon the head or upon the feet. I am afraid the difficulties in this case would be similar. I do not understand that a town has a right to go out of its limits to expend money. I am afraid in that case they would find themselves without power to recover if they tried it.

A MEMBER. I should like to ask for information, in connection with a case which occurred with the board of health at Salem, where a nuisance was found on the premises, private property, which consisted of a privy-vault in a disagreeable condition. Notice in the ordinary form was served once or twice on the owner. He appeared to take no notice of it; and in order to give him every chance in the world, we went to him. He proved to be very obstinate, wouldn't listen to us, wasn't apparently open to reason, and said, "You can go ahead and do as you like; I have consulted authority and I shall do thus and so." I was very careful not to get cross, and being rather quick in my disposition, had to be especially careful, because he was, if anything, quicker than myself. I also took a witness every time I interviewed the man, because I knew he was so obstinate and so persistent. He finally showed no disposition whatever to abate the nuisance. We realized that the board of health there had a job on their shoulders, but we also realized that we were coming out top of the heap.

So I was instructed to proceed.

I got wagons filled with good, clean gravel, with a good force of workmen. Every workman was instructed to maintain sealed lips. We went there. The city solicitor said, "Perhaps if you

proceed so and so, you will be able to get along." I went there, choosing a time when the man had gone away to his work. I had, therefore, to meet the mistress of the premises. I first asked if she objected to our coming in. She made no response. Silence gives consent sometimes and so in we went. We cleared that vault of the contents. I was particularly instructed by the city solicitor to abate the nuisance in the most reasonable manner. One method thought of was, to clear out the privy and knock it down. It seemed to me, perhaps, it was more reasonable still to clean out the vault, fill it up and leave it. Every movement we made there I kept a record of, the date, the time and everything. I thought I would like to ask Mr. Bailey what he thought of our position from a legal stand-point, because an ex-mayor had the case in hand and was the legal backer of this gentleman, and I think if the man had felt he had any redress he would have given it to us for all he is worth, but we have not heard from him from that day to this.

MR. BAILEY. I will say this, that if the Board of Health of Salem follow the advice of my Brother Evans, I think they will come out all right in the end.

A MEMBER. One thing more. You say it is difficult to collect money. We had a case in Salem, on Curtis Street. There was a vault there and a cess-pool alongside it, and the leakage soaked through into the cellar of that house. The house was occupied by two parties. The owner lived in Springfield, and I should consider that he was somewhat parsimonious. Our board of health got somewhat out of patience with him. They served notice on his legal firm and still heard nothing from this man. I was instructed to go there, and I went. We knocked the privy down, hauled it off, piled the wood up where he could see it at any time he wanted to, cleared out the vault and cess-pool, filled them up, and collected a bill of fifty-four dollars.

The meeting was then adjourned.

THE END.

A PLAIN RIGHT AND A PLAIN DUTY.

IN this wicked and adulterating generation it is high time that the public should insist on knowing what food compounds are made of and all that they are made of. The right of the people to this knowledge is so clear, that it needs only to be stated, not argued, yet there is no law so far as we know compelling manufacturers of food products to print the composition on every package. Sanitary Commissions, Boards of Health, and Food Commissions should do all in their power to arouse public sentiment to demand that such a law be enacted.

All the laws in the world, however, cannot prevent people from buying cheap, and perhaps injurious food, but full information should be laid before the buyer in such a way that he need not be deceived. As it stands to-day, one may be paying very high prices for nothing but chicory coffee, "shell" spices, and alum or ammonia baking powders. The New Jersey Food Commission years ago made a start in the right direction by recommending that a law be passed compelling manufacturers to print the composition of their preparation on each package. No such law has been established. The U. S. Gov't Report in 1889 recommended the passage of a similar law. The sentiment is growing, but everyone interested in pure, wholesome food and good living should use his personal influence in advancing this idea.

Such manufacturers as adopt this policy should meet with the heartiest support from everyone interested in the welfare of the community. This policy, we believe, is not only honest, but the best one, and we for ourselves commend the Cleveland Baking Powder Co., who have been the pioneers in this movement. For years every ingredient used in making this powder has been plainly printed on the label, that every consumer might know exactly what he is using, and it is our opinion that the largely increased sale of Cleveland's Baking Powder is partly due to this straightforward, up-and-down way of doing business.

Whether such a policy is the best one for the manufacturer, or not, is of little moment. The health of the consumer should be first and everything should be done to promote his interest. Baking Powder is only an illustration of hundreds of other articles in the market advertised as "pure," "absolutely pure," "warranted pure," "guaranteed pure," when official analyses have shown the same articles to contain unwholesome ingredients. It is to be hoped that the time will shortly come when manufacturers shall be compelled, if they will not do it voluntarily, to let the public know the composition of their goods. Then, if the consumer wants to purchase chicory coffee, or ammonia baking powder, he is not deceived, at any rate. If he suffers ill health, he can only blame himself.

P. S.—As we write our attention has just been called to the very active work of the Ohio Food Commission. Many grocers have been arrested and fined for selling alum baking powders.

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	Parts per 100,000	Grains per U. S. Gal.
Total Solids	5.5	3.2105
Organic and volatile matter	1.1	0.6421
Fixed Solids	4.4	2.5684
The fixed solids consist of		
Silica	0.900	0.5254
Sesquioxides of Iron Alumina	0.042	0.0245
Lime	0.721	0.4209
Magnesia	0.186	0.1086
Chlorine	0.375	0.2189
Sulphuric Acid	0.230	0.1343
Soda	0.709	0.3139
Potash	0.278	0.1623
These constituents are probably combined as follows:		
Sulphate of Potash	0.508	0.2965
Sodium Chloride	0.618	0.3607
Sodium Carbonate	0.653	0.3812
Carbonate of Lime	1.248	0.7518
Carbonate of Magnesia	0.391	0.2282
Sesquioxides of Iron and Alumina	0.042	0.0245
Silica	0.900	0.5254

The water is limpid, clear and white, and slightly alkaline. These results show this water to be one of unusual purity for a natural water. Its use as a drinking water can therefore in every way be recommended.

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TYPHOID FEVER EPIDEMICS.

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Organized 1890.

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VOL. III.

APRIL, 1893.

No. 2.

QUARTERLY MEETING.

PARKER HOUSE, BOSTON, April 27, 1893.

THE meeting was called to order by the president, H. P. Wolcott, M. D., at 2.30 P. M. The record of the last meeting was read by the secretary of the Association, Dr. Woodward.

THE PRESIDENT. I am requested to call the attention of the Association to the fact that the annual dues are payable by the first of May, and that Dr. Field is ready to receive them at any time. The first item upon the programme, this afternoon, is in relation to the investigation of the epidemic of typhoid fever in Springfield, and Dr. Chapin will speak to us upon that subject.

ADDRESS OF WALTER H. CHAPIN, M. D.

MR. PRESIDENT AND GENTLEMEN: I have to speak to you, to-day, about an epidemic of typhoid fever which occurred in Springfield, in the summer of 1892.

I feel that Prof. Sedgwick, to whom is due whatever of honor there may be in determining the cause of this epidemic, could tell you the story better than I can; but he has insisted that I should lead the way, and I will do as well as I can.

Some of you may know that Springfield is a city of about

50,000 inhabitants, located in the southwestern part of the State of Massachusetts, on the line of the Boston & Albany Railroad, just beyond Worcester. The city is largely commercial and a place of residence for people doing business in the surrounding cities, commercial travellers and the like.

The business and tenement-house portion of the town is situated on a plain near the level of the river, about half a mile wide, extending up and down the river about three miles. The rest and better portion of the city is built on the high ground extending about three miles to the east of the river. The soil is sandy and the whole hill is well drained by good sewers. It was in this district that the fever appeared. We had had little typhoid since 1883. About the fourteenth day of February, 1892, I experienced some chilly sensations, and after ten days, I went to bed with a temperature of 104. I stayed in my room thirty days, partially delirious, with intestinal hemorrhages and other little things that are of interest to persons who have recovered from a typical attack of typhoid fever. At the same time, while I was at the height of my fever, a young man about sixteen years of age, living in the next house, died of typhoid fever. The milk used in the two houses was supplied by a milk dealer, who also supplied a large portion of the people in the neighborhood with milk from various farms. In June, a man died of typhoid fever in one of our best streets, in the neighborhood which is heavily dotted with red spots upon the map which is being passed around. He took milk from the same dealer. The first week in July, there was a case of typhoid fever reported, and thereafter till August first, many cases; we found that we had got to work on the matter and unearth the cause. The cases at first ran irregular courses, and we were slow in determining the extent of the epidemic because the physicians were in doubt as to the nature of the fever and would not report the cases as typhoid. A special call for reports of all kinds of continued fever finally brought abundant reports.

In the second week in July, you will notice in the other small diagram, that there were about seven cases, in the third week there were eleven, in the fourth week twenty-eight, and the last week in July and first week in August there were forty-three cases of typhoid fever which were discovered. All these cases of that date occurred in this highly-elevated portion of the town which we call the McKnight district, from certain real estate men who built the place.

The streets are broad and clean. There are no privies and no cesspools there. The streets have good glazed-pipe sewers, which have a general grade of six inches in a hundred feet, connecting with good brick trunk sewers. There were no unsightly piles of garbage and ashes about the back yards as in some portions of the town. The cases were huddled, — three or four in a family.

The attention of the board of health was called to the matter about the third week of the epidemic, when there were twenty-five of these cases developed in that week. There were a good many theories advanced to account for the trouble. Most of the people living in the district were firmly of the opinion that they caught their typhoid fever from inhaling certain noxious gases that came out of the well-holes of the sewer, and they called the attention of the board of health to the fact that those sewers were very bad. They were not the worst sewers in the town — in fact, they were pretty good sewers. The superintendent of streets assured us they were flushed at least twice a week in the night, and were kept very clean for sewers.

The teacher of science of the High School came to me, living in that district, and said he had analyzed the water in previous years, and found that his well water had deteriorated a great deal. There were more foreign substances in the water than in previous years. He was afraid that the cemetery near by was leaching its noxious material down through the sand of this district and poisoning the wells. I went with him and examined

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very hastily a lot of wells. We found that all of them had some chlorides, and one or two of them had some lime ; but some wells, near the cemetery, were pretty heavy with chloride, and some of them did not have any, and some of the wells that were quite a good ways from the cemetery had more than any of the rest of them. There was nothing definite about it. Besides this, in many places where typhoid fever existed, the pump which connected the house with the well was out of use and rusty, the valves dried, and evidently had not had any water in them for months. The people in the houses said they did not use well water at all. Some of them used water from a spring in the neighborhood which also had some soluble chlorides in it. Some brought their water from the Massasoit spring, out in the country, ten miles from the city. A portion of them used city water. The question was raised whether the city water was at fault, but the epidemic was sharply defined in its limits, and the great portion of the city supplied by the city water had no typhoid fever at all, or but a stray case here and there.

It was suggested that a certain man peddled milk to most of the people in this district, and a good many of them had typhoid fever. He was the dealer who supplied me with milk when I was sick. I went to him and said : " Mr. X., you are suspected of retailing typhoid fever, and I want to examine your milk-farms." " Very good," he would be glad to have me. I went with him in his carriage to the town of Suffield, Connecticut, and visited there six dairy farms. I found there nothing unusual. There had been no typhoid fever. On the street where these farms were located one farmer said they had a case ten years before. They cooled their milk in various ways, apparently pretty good ways, except one where the cans were submerged in a foul cistern ; but no typhoid fever was there, and I came back to Springfield without having found any typhoid fever at all. He also showed me two farms in the town of Agawam where, he told me, he obtained his principal milk supply

for the infected portion of the town. Nothing was found there whatever. There had been no typhoid fever on either of the farms for a period of fifteen years. One farmer cooled his milk in aqueduct water and without submerging his cans, and the other cooled his in well water, also without submerging them. I asked the milkman if he had any other milk supply. He said he had taken on one farm three or four days before, and that was never examined. He said he sometimes got some milk from Feeding Hills, but he never took that milk up on to the hill; besides, Dr. So-and-So had been out there and said it was all right. "Oh," I said, "Dr. So-and-So has been out there. Did you ask him about it?" He said, "There were so many people up there that had typhoid fever that I was afraid my milk might be at fault, and I asked Dr. So-and-So to go up there and look, and he said it was all right."

I came back without having discovered anything. This was about the fourth day of August. At that time there were one hundred people sick with typhoid fever up on the hill at various places. From the fourth of August to the fifteenth of August I was unable to get any new light in this matter. I had never had any experience in hunting up the cause of an epidemic before. I did not know what else to do than I had done, and in my extremity, Prof. Sedgwick turned up one Monday morning in front of my house and asked if the board of health in Springfield wanted any help. I told him I thought they needed it some, and he said that the State Board of Health would very gladly deputize him to help us out in it, and without much more discussion of the matter we went to work. He asked me what I thought it was. I told him that I did not know; that I had examined the water and milk, and did not see what else there was. "Well," he said, "let us begin again," and we did.

We visited, one morning, about forty cases of fever in the thickest of it, and found that they had nothing in common, save only the milk. All of the forty cases we saw that morning,

took milk from the same cart except one family. That family had two cases of typhoid fever, and said they got milk of another milk peddler entirely, but after close questioning we found that about every other day they would get short of milk and go to the nearest grocery store and get milk there. We went to that grocery store and there found that the milk was supplied by Mr. X., so all the cases we knew of at that time were exposed to the liability of drinking milk from Mr. X.'s cart. Prof. Sedgwick was then very certain it was a milk epidemic, and I thought it looked like it, and we went to see what milk it was. We went to Mr. X. again and said, "We find that all these people take milk of you, and although we have not been able to discover anything wrong in your milk, yet it must be there. Now tell us again what milk you have."

"Well, I have No. 1, that is Agawam milk, the best milk I have. I have No. 8, that is from Agawam, and I have some from the Suffield dairy, but I don't take that on the hill. That goes down to the Cooley Hotel, and 68 goes from Agawam to the Blackman House."

Well, we went to Agawam again. No. 8, as I said before, had not any typhoid fever, and we went out to No. 1, and Prof. Sedgwick, in his nice way, said, "Do you have any sickness here?" "Well, we have a little boy who is sick of typhoid fever."

Prof. Sedgwick looked at me, and I wilted. I felt very tired indeed. [Laughter.] I had been there and they had not any, and then came again and they had. I did not know what to make of it. We looked at the wells and cooling-boxes and cows and buildings, and all that sort of thing, and took some samples of water and sent them to Boston, and at that time Prof. Sedgwick received a telegram announcing the death of one of his assistants, and was obliged to go back to Boston, firmly convinced that the typhoid fever came from that house. We ordered the man to cease having anything to do with the

sick person (who was his son), to take none of the milk into the house at all, to use another well entirely, and wash his own cans, bottles and instruments in a shop apart from the house, and we allowed him to go on selling his milk in that way.

The next day, that is, about the eighteenth of August, or the fifteen or sixteenth of August, I saw Dr. So-and-So on the street. I said, "What did you see when you went around with Mr. X. to look up his milk?" "Why, said he, "the house was over here, the barn was there." How many places did you go to?" "One." "Where was that?" "It was in Feeding Hills." "Didn't you go anywhere else? Didn't you go down to Suffield?" "No." "What did Mr. X. tell you?" "He said they were all getting typhoid fever on his route, and he was getting anxious about it, and those people that had typhoid fever had drank milk from Feeding Hills." "Well," said I, "what do you suppose he took me down to Suffield for?" "I don't know. I guess he must have lied."

I telephoned Prof. Sedgwick again, and down he came. We went to Feeding Hills, away out in the country. We found a very thrifty farmer who did not happen to be at home,—if you will excuse the bull. His daughter met us at the door, and in response to our questions whether there was any typhoid fever in the house said, Yes, the twenty-sixth of last February she was taken sick with bilious typhoid fever, and was sick about four weeks. I went to bed on the twenty-fourth, and she went to bed on the twenty-sixth of February. We were sick about the same time. We made ourselves sure on that point. We asked about her sickness, found who her physician and nurse were and went on with the investigation of the farm. The barn was apparently all right. The morning milking was done about five o'clock in the morning and the evening milking some time about eight o'clock in the evening. The milk was collected about eleven o'clock at night. It was cooled in a large well nearly eight feet across and perhaps fourteen feet deep, with five feet

of water. Each milking amounted to about ninety quarts, — nearly 200 quarts a day shipped from that farm. The morning's milking at five o'clock would be about ninety quarts. These cans contained ten quarts apiece and were plugged with hard-wood stoppers, maple stoppers, I suppose. They were driven in exceedingly firm, so you could not draw them out with your hands, and were as tight as could be. We first looked to see if the cans leaked, and of the nine cans we examined four leaked a considerable stream of milk around the plug. Two of them, to be more accurate, leaked a stream around the plug, one oozed around the plug, and the fourth one leaked a stream through a crack in the plug, showing that nearly fifty per cent. of the cans in the well at that time were leaky cans. The cans as they rested in the bottom of the well were about four feet under water. The morning's milk was put in there at five o'clock in the morning and remained in there until eleven o'clock at night. The evening's milk seldom went in the well, but was set in water that was pumped up, and I suppose was generally left there until the collector came at eleven o'clock and took it off.

This milk was a portion of the property of the Springfield Co-operative Milk Association, of which the farmer was a member. The members of this association all send their milk to this depot in Springfield, and it is dispensed from there. Their method is to make a contract to send all their milk to the association, and the association contract to pay for it all. Then, at the end of the month, if there is any dividend to declare, it is declared and the members are paid a certain price for their milk, the price varying from month to month, according to the dividend they can declare.

The water in this well was foul; it was milky and it was dirty. The barnyard was within eight feet, and it looked as if the drainage must go out in there. The well was covered over with plank, the two or three central planks being left loose purposely so that they could be removed and the cans let down in

the well and withdrawn at pleasure. The water was drawn from the well by a chain-pump. The spout was about a foot long, and the end of it, as in all these chain-pumps, was turned down at a right angle so the falling stream of water must go directly down on the planks. A little piece of the planks in front of the spout had been driven down and formed a trough back into the well. The stream from that pump ran all over the planks and spattered back into the well in abundance. The planks were dirty. There was loose sand upon them, and near by there was cow manure, in lumps as it had dried, showing the smooth surface pressed by a boot-sole, showing that the men had walked about there with dirty boots and distributed cow manure there, which material was washed back into the well. So it appeared that this well was dirty, and that the milk could get that water into it, and that foreign material could be brought to the well on boots.

Now, where did it come from? The testimony of the people at the house was that the excrement from the typhoid fever patient had been carried to the privy without disinfectants. I do not know that it was disinfected at all. About the first of May the privy was cleaned out; the night soil was mixed with a considerable quantity of fresh earth, and the whole material was carried out twenty rods back of the well in question, or thirty, to a field upon which they raised tobacco. It was spread broadcast and plowed in. The field was then ridged up, and about the first of July, or latter part of June, the process of cultivating the tobacco began. Until about this time there was no call to go into this tobacco field. The crop was not ready to set and they had nothing to do with the field, but about the first of July they did begin to cultivate the tobacco, and about the fifteenth of July, we commenced to practice medicine in the city of Springfield.

Now, I want to be very certain at this point. We know that it was milk that produced this epidemic. We know it was

this milk that produced the epidemic, but we do not know that this was the way in which the poison got from the patient into the well. This is merely a theory, but we do believe that the excreta went from the bed to the privy, then to the tobacco field, and then to the well and into the milk cans. That seems to be a reasonable theory. Having got that far, we were very certain that we had discovered the cause of the epidemic, and so much so that we were ready to tell the Springfield Co-operative Milk Association the facts, which we did a very short time afterwards, but we ran up against an obstacle. We knew what the trouble was, but our milk peddler, Mr. X., said, "I don't carry that milk up there at all. I don't carry any milk into the infected districts." On the other hand, Dr. X. told me that was the milk he carried. We did not want to bring Dr. X. into it to prove that that milk did go there. We could not budge Mr. X. We got the milk inspector down there, Mr. McCaffrey. We got a discharged milk peddler, and we questioned him, and we discovered that a little of the milk did go up there. The milk peddler owned up to three cans, but he said he never peddled that milk; it always went to the grocery stores. The next thing we heard was from Mr. X. himself. I am giving this out of order, but Prof. Sedgwick will correct it, if I do. What I say is true whether the order is true or not.

Mr. X. picked me up on the street and gave me a ride down town. He was pretty pale and thoughtful. He said, "Doctor, the fact is, I lied to you." "Yes," said I, "I know that. I don't know how much, though." "Well," he said, "the fact was that I took three cans of that Feeding Hills milk up on the hill every day, and left them at the grocery stores, and that was all the milk that went up there, and I suppose that was the milk that caused the trouble. These people must evidently have gone to the grocery stores and got the milk. And (says he), there is another way that they might have got it. That is, I was accustomed to pour that milk out of the can into my delivery

can, and then pour it back into my third can, and as I carried it into the grocery store, that may have infected my delivery can, too." Well, I believed that fifteen minutes. Then I commenced to doubt again whether that was straight or not. I reasoned that the people who had the typhoid fever actually bought milk of him, and I did not see why they should go a roundabout way to the grocery store to get milk they already had, and it seemed pretty certain again that that milk must have gone up there. Well, in the meantime, Prof. Sedgwick had gone back to Boston. It occurred to me if I could find out how much milk that man bought, and where he bought it, and where he sold it, that I might be able to prove what milk went on to the hill. I am stating these points, gentlemen, to show the exceeding difficulty of arriving at an absolutely sure statement of the facts. We did not wish to go into the papers; we did not want to publish anything we could not back up with positive testimony, and long after we knew that it was this milk that caused the trouble, this No. 11 as we call it, we did not dare to say so. I went to Suffield alone. I found the farmers' account books. I copied them from the first of July to the middle of August, and came back with a record of every quart of milk that came out of the town of Suffield in Mr. X.'s cart. I stopped at three farms in Agawam, and I got the record of every quart of milk he had obtained there. I went to the Co-operative Milk Association, and I found every quart of milk that had come from the Feeding Hills farm in the same way, and I then had all the milk he obtained. The question was, How did he distribute it? He had the Blackman House, he had Cooley's Hotel and some minor hotels.

I went to the first one. "What time in the morning do you get your milk?" "Well," he says, "we got through with X. last week, and the reason we got through is, he came so early, — two o'clock in the morning. That is too early to wake anybody up to get milk. He always came at that time, never any later

than that, — sometimes at half-past one.” “Are you sure about that?” “Yes.” I put that down then as certain, that the Blackman House took nearly one hundred quarts of milk at half-past one in the morning.

When I got hold of the milk peddler, I said, “What time does the team come in from Suffield and Agawam?” “That comes in at one o’clock.” Well, that agreed pretty well. “How is it distributed?” “Well, X. loads up his cart and the other peddler loads up his cart, and X. comes up and does the wholesale work, and the other peddler goes down to the lower part of the town and does his retail work.”

Mr. X. was running two milk carts. There was no typhoid fever on this cart No. 2. Then I had traced the fact that Suffield and Agawam milk came in at one o’clock, and some of it was dropped off at the Blackman House from half-past one to two o’clock. I went to the Cooley House and got their account of how much they had from day to day. They got their milk about three o’clock in the morning, but they were not sure. “Was it as late as five?” “Never, never as late as five; probably never later than four, anyway.” I found out that he had some other minor dealings in that part of the town, and then back I went to the association. “Now, what time does Mr. X. get here?” “Well, he loads up here about five o’clock.” “What does he get?” “Well, he gets milk from Agawam, and that we bring in to him.” “Does he always take all of that milk?” “He does.” “Then what does he do?” “He fills up his cart with our milk.” “Does he bring any milk here?” “Well, sometimes he brings two or three cans, — not much.” “How much does he buy of you?” “Well, I guess the bookkeeper can tell you.” So we went to the bookkeeper, and we got his daily tickets showing precisely how many quarts of milk he got. Now, those tickets had four or five numbers on them, 120, 160, 140, 10. “What do all these numbers mean?” “Why, the big number, 160 quarts, 140 quarts, is the milk Mr.

X. loads out on his own cart at five o'clock in the morning." "Does he get it all in the morning?" "Yes." "What milk is it?" "It is milk produced out in Feeding Hills." "No. 11?" "Yes." "How do you know he always got No. 11?" "Well, when a milk peddler is satisfied with the dairy he takes it right along. If there is any left, anybody else can have it, but until he has loaded that milk, it is his." Then I went on with the process of subtraction and found out that the Agawam milk and the Suffield milk was wholesaled to two large hotels, and besides that loaded up another retail cart with 280 to 300 quarts of milk and was sold at retail to another portion of the town. That disposed of the Suffield milk and Agawam milk, with the exception of thirty or forty quarts, which corresponded to the statement of the association people that X. brought there every morning about three or four cans of milk on his own cart before he loaded up. Then we were in condition to see that Mr. X. distributed three or four cans of Agawam or Suffield milk, the entire product of one farm in Agawam (about one hundred quarts), and the milk from Feeding Hills (three dairies), two of which had no typhoid fever upon them, and one of which had typhoid fever upon it. We had Dr. So-and-So's statement that Mr. X. had told him he had given people milk from the farm in Feeding Hills.

We told the people at the Association on the first day of September this story, and they listened to it with some surprise, and without any equivocation or hesitation said, "You are certainly right, and what shall we do?" "Why, stop soaking that milk in that well," and that was the last day in which the milk was submerged in the well. The typhoid fever was prevailing at that time, and fourteen days later we were practically having no new cases, and from that day until this there has no typhoid fever appeared in the district where these cases occurred, in

Ward 5, which is the ward covered by this epidemic. There were during July and August and a portion of September 103 cases of typhoid fever. 101 of them had access to this milk, and two of them, probably not. You will see on this map that down in the tenement-house portion of the town there are two little spatters of red dots. Our attention was called to that, and we put Mr. McCaffrey, the State milk inspector, immediately upon the route of the man who supplied those houses with milk, telling him to observe the check-mark on the plugs of the cans. He came back and reported to us wherever there was typhoid fever and the man carried in milk, the plug mark was "11." That was the Feeding Hill's number. There we had positive evidence that the supposed infected milk did go to families having typhoid fever. Beyond these cases there was a slight epidemic the sixth of August, concerning which I have no time to speak. It was probably the same milk, or could have been the same milk, and other than that there was no typhoid fever, except imported typhoid fever, which could be plainly shown to be imported typhoid fever. Verily, gentlemen, a little eleven leavened the whole lump. [Applause.]

THE PRESIDENT. Prof. Sedgwick has kindly volunteered to add an account of his very important share in this investigation.

ADDRESS OF PROF. W. T. SEDGWICK.

MR. PRESIDENT AND GENTLEMEN: I do not know that I can add very much to what Dr. Chapin has told you. I only regret that he is obliged to take his train and leave us so soon, for the excellent work that he did, particularly in tracing out and proving the whereabouts of the milk from different dairies, was a work requiring days of labor, and deserving high commendation.

From the moment that we found forty-six cases, forty-four of whom had had milk from one man, we were satisfied that milk must be the cause of the epidemic. As he has told you, the water supplies were different; the privy relations and sewer relations and so on, if they could be supposed to have anything to do with such an epidemic, were so different that there was no common bond between the people involved. It became thoroughly monotonous going from house to house to learn where the milk came from. We could see the words forming on the mouth of the people before they actually came out in answer to the question, "Who is your milkman?" and it got so that we could hardly ask that question without having it appear that we expected "X." to be answered. We devised all kinds of ways of varying the questions, asking for example, "Where do you get your butter?" and listened patiently while we also heard where they got their vegetables. "Well, what water do you use?" "Ludlow" or something of that sort, and by-and-by we would innocently ask, "Where do you get your milk?" The answer was always and invariably the same. From that time we never doubted that the cause of the trouble was in the milk; of course we could not doubt it; but then began the most difficult part of the investigation. The milkman denied positively that he had left any milk there which came from an objectionable source, and we were very near being led into error by the discovery of the boy sick with typhoid in the house in Agawam from which the milkman alleged that the milk of this district had come.

The milkman's plan seems to have been this: He said, "I will send these people to a place where I know that everything is right," so he sent us to the Agawam farms, admirable farms, and it must have been to his horror and surprise that we found there a case of typhoid fever. It had developed later and, as it turned out, it was probably a Springfield case. The boy had been to Springfield just two

weeks before he was taken, and instead of having been the cause of the epidemic he was undoubtedly a sharer in it. In my judgment at any rate, that fact was evident, and I spent, I should think, altogether three or four hours in carefully questioning the members of that family so as to see if I could find any way by which the typhoid got into that house. It was a good, clean, Yankee family, and I asked them if anybody had stopped there to use their privy, which was not far from the well. "No, nothing of the kind." "Have you had any company who could possibly have brought the disease here?" "No, nothing of the kind." "Well, when was the boy taken?" "He went up to the city at such a time," the time agreeing perfectly with the Springfield cases. There was the sick boy, however, on the milk farm which was said to provide the milk for the district infected, and it seemed as if it was an arrangement for deceiving us. I took samples from the well for bacterial analysis and chemical, and it seemed to be no worse than ordinary wells; bacterially it was very good indeed. There was good filling between the privy and well, so that I was skeptical with regard to the well having been the cause, and yet knowing that it was a milk epidemic; the milkman apparently telling the truth, and seeing this milk that had gone to the people on the hill, I worked about as hard as a man ever worked, and Dr. Chapin did too, to prove that that boy had given those people typhoid fever. At the same time we could not bring it about, and we were feeling very much chagrined when the new line of evidence came up. It only shows how hard it is to fight the truth if you give the truth a fair chance.

We were immensely helped when Dr. "X" told Dr. Chapin that he had been to this farm, because then the question arose, and remained, Why had he been there?

Throughout the whole investigation the Springfield Co-operative Milk Association acted nobly. They gave us full access to their books; they helped us in many little

ways, telling us just how the milk was handled. We had to study the whole system of numbers, to know what No. 68 meant, and where it went, and who produced it, and what sort of a farm it came from, and so on. No. 68, by the way, was one of the points on which we were at first very much deceived. On his first ride to Agawam, Dr. Chapin was told that No. 68 went to the Blackman House, which was the truth. On his second investigation he was told that all the milk from Roberts' farm went to the Blackman House. We went and got the milk tickets of the Blackman House and with the aid of the Co-operative Milk Association, proved that not a drop of No. 11 went there. That was one of our first steps. So it was all through, a series of provings and disprovings, until we did arrive finally, I believe, at the complete truth, excepting as to that one point, how the milk got infected. We do not claim that there we had absolute proof. In fact, we admit freely that we had not, but this much we are sure of: This was a milk epidemic; moreover, it was caused by milk produced on the milk farm of Byron C. Roberts; and as the cans were submerged in a well, there were various ways by which the milk could have been infected. We know that the men went from the tobacco field to the well with their dirty boots and carried dung on their boots, leaving it on top of the well. A portion of human excrement containing typhoid germs might in this way easily have fallen into the well and got into the milk. Whether it did or did not do so, we do not know. This farmer was changing his hired men continually. There had been a whole succession of them. Some had left for uncertain reasons; some of them may have had early cases of typhoid. We do not know. If they did, it is easy enough to see how they may have contaminated the milk. The fact remains that it was unquestionably a milk epidemic, and due to that particular milk.

This is one of those cases where it would be very easy,

of course, to go wrong, but I think I have said enough in connection with what Dr. Chapin has said, to make it clear that we have finally arrived at a good measure of the truth. You may ask about the bacterial analysis of the wells. At the time I was very much disappointed. The bacterial analysis of the well on the farm where the boy was sick did not show any typhoid bacteria, and I felt at the time very much disappointed, because I then hoped to bring that case into causal connection with the Springfield cases, but afterwards when it turned out that this case did not have anything to do with the epidemic, I was relieved. The natural conclusion from such facts is that it is entirely safe to let the truth alone and to follow strictly scientific principles, without trying to twist the evidence in any way.

It only remains to say that in all there were twenty-five persons killed and one hundred and twenty-five more, severely wounded in this epidemic. If anything of the sort had happened as a result of the Homestead riot, or from a broken bridge, the whole country would have been stirred over the terrible calamity, but as it was "only" a typhoid fever epidemic, only an "accident," very little was said, very little was thought. The dead were buried, the rest recovered and are going about their work; and most wonderful of all, people are going on taking milk as before from the same man.

THE PRESIDENT. Of course, this is by no means a single experience in the history of Massachusetts. There must be a good deal of information in the mind of almost every man here, after such an account as this, which would explain, or at any rate, give occasion for questions with regard to the occurrence of it; and it must be that somebody here can add something to this discussion, or that some question may be asked that would be of service. I have no doubt that Prof. Sedgwick would be willing to answer any inquiry that may be put to him.

DR. DAVENPORT. I would like to ask whether this well

was in use at all for any other purpose than cooling milk?

PROF. SEDGWICK. Only for submerging the cans. It was not a house well. It was a well at the barn.

DR. DAVENPORT. How was it in regard to washing cans and utensils?

PROF. SEDGWICK. The milk pails were washed in a very good stream of water from the mountain. We went into all that very carefully.

DR. DAVENPORT. This water was used only for cooling?

PROF. SEDGWICK. Only for cooling.

DR. DAVENPORT. And this was the barn well?

PROF. SEDGWICK. Yes. It was not the well in the barn, but the other side of the barnyard.

DR. DAVENPORT. Did they use any cooler?

PROF. SEDGWICK. That was the trouble; the man was using the well to avoid the cost of a cooler.

DR. DAVENPORT. Were the cans completely full of milk?

PROF. SEDGWICK. It was alleged that they were always completely filled. After we had been to the farm we met the farmer coming home and asked him if he always filled the cans full, we having just found that they were not filled, not one of them. He said that they were always completely filled. As a matter of fact, the cans were not full. On shaking a little we could hear the milk swashing around inside every can. We opened some of them and found that they were perhaps five-sixths full. There was a chain-pump which washed things back into the well, owing to the poor curb. We saw no reason to suspect that the water went directly into the milk intentionally, although a certain servant whom we followed up, a person who had been there and had left, and would be likely to be full of gossip, told us that it did not infrequently so go in.

DR. DAVENPORT. So the water of the barn well would be most likely to be used for cleansing or rinsing the vessels, if any such water was used?

PROF. SEDGWICK. I do not think so in this case, because

it was at a little distance from the house. They would have to pump the water, whereas they had near the house running water from the mountain, which, of course, would be easier to get for washing purposes than the pump water, and I am inclined to think that the milking utensils were regularly washed in that mountain water.

DR. WOODWARD. Did the same man that cultivated the tobacco, milk the cows?

PROF. SEDGWICK. Yes. To return to the water, I may say that it was the water from the mountain that was used for washing dishes and cans, not for drinking. For drinking, the family had another (third) supply from which they got their water by means of a little tin pail, and we found no reason whatever to suspect that that was contaminated. Its situation was such it could not well have been contaminated. It may be said, also, that there was some question about the diagnosis of the cases of typhoid fever in the farmer's family, but this matter was settled very nicely, as it turned out, by the fact that the attending physician had certified to an opinion given at that time that the principal case was one of bilious typhoid fever. I think if it had not been for that certificate the attempt might have been to deny altogether that it was typhoid. That certificate was on file in an insurance office, and it served a very good purpose.

DR. ABBOTT. There is one point worth mentioning, perhaps, which relates to the milkman himself. We have had several of these milk epidemics within the past few years, and the people generally are becoming a little more enlightened in the matter, and begin to express their opinions after a serious epidemic has got under way. But the point in regard to milkmen is this: that human nature enters into this question. The milkman will, if he can, look out for his own interest, and not only that, but he will mislead and do his best to draw your attention in another direction. I remember just such a case in Waltham some three or four years ago, where an epidemic occurred upon a certain milk-

man's route who sold milk in the Nonantum district in Newton, and also in Watertown. Several cases occurred upon his route, and upon his route alone. There was no other case in the neighborhood at that time. I went out there and visited his farm and found there a very neat dairy, everything very nice about it in every way; in good condition, new barn, new stable, and a well which had just been put in. But he had not dug his well deep enough, and the well gave out. He had gone to a neighboring house, a distance of perhaps twenty or thirty rods, for water. I went over to that house and found that there had been three or four cases of typhoid fever and one death there, and the water he used was taken from that house, he said, not the water for washing his cans, but simply the water for watering his cows, but I am inclined to think that his statement was incorrect. He was disturbed at the matter, because it had interfered with his business. His business was for the time being completely stopped in that section of Newton. The people stopped taking milk of him, and, of course, threw it all back upon his hands. He threatened to sue some one, and he came to see me about it. He did not seem to know whom to sue, but I am inclined to think he wanted to sue the Newton Board of Health. That is how it acts. Sometimes the business stops itself, for people will stop taking milk as soon as they learn the true cause of the epidemic. In this case the real cause undoubtedly existed in the well from which he took the water, which was within a very few feet of the barn cellar, and in such a locality that the filth from the barn cellar could have got into the well, and my opinion was that the excreta of the typhoid patient was disposed of in that cellar. I could not prove that, but that was my opinion at the time. I think deception is the rule, if you come across a milkman who is not unusually honest. He will not only do nothing to help you, but he will do all he can in his power to mislead you.

DR. WOODWARD. In this connection I can report a case of typhoid epidemic that came under my notice some ten years ago, in a small hotel. The Black Mountain House was situated in Campton, New Hampshire, and in August had 130 guests. A child from a Massachusetts city, the daughter of a physician, by the way, had had a mild case of typhoid fever, and in the second or third week of the disease was sent up to this hotel with her mother, to get well. Ten days after the arrival of the child at the hotel, thirty of the guests came down with typhoid fever, and two of them died. Up to that time, so far as I can learn from the records of Campton, there had been no typhoid for years. The old country doctor who had been practising there nearly thirty years, had practically never seen a case of typhoid. Milk was supplied from a farm owned by the proprietor of the hotel, some two or three miles distant. The water came from a mountain in that town through half a mile of wooden pipes, but the privy consisted of simply the seat and underneath that a plank trough, which was dumped in a field every two or three days. Just how the guests of the hotel were contaminated I was unable to make out, but the fact was that ten days after this child came to the hotel, thirty of the guests were stricken with the disease and two of them died.

Now, this whole matter of handling typhoid in our cities, I think, is an exceedingly difficult one, and I will state briefly our system in Worcester. We have included typhoid fever among the diseases to be reported by the physicians, and our physicians are usually very good indeed about reporting them. Whenever we get a report or hear of a case of bilious fever or typho-malarial fever, or hear of any of that whole list of diseases, we always investigate, and in the majority of instances it proves to be typhoid. In investigating cases our inspectors have a printed card which they are obliged to fill out in every case. That card requires them to fill out the name, residence, etc., of the

person affected; the owner of the house; the water supply; whether connected with the sewer or not; whether there is a well on the premises or not, and the milkman; and whenever we find two or three cases of typhoid arising on the route of a single milkman, we always look at his farm. So far we have never had an epidemic of typhoid in Worcester that we could trace to any source. Last year we had something like fifty cases of typhoid. A number of them we know were imported from Milford, where they had an epidemic. A very large number out of the fifty were patients in our City Hospital who were brought in from the outlying towns. I think it is exceedingly important to require that typhoid fever be reported, and in Worcester we have had no difficulty in getting physicians to report the same as they report either diphtheria or scarlet fever.

DR. FOX. About the water supply in Black Mountain, where did that come from?

DR. WOODWARD. The water came from the mountain about half or three-quarters of a mile from the hotel.

DR. FOX. Was that the only water used?

DR. WOODWARD. That was the only water used.

DR. FOX. I think I can correct you a little on that. I was one of the victims. [Laughter.] I had a severe attack myself. My whole family, five of us, all were victims. When the child came there she had not been sick. She had been feeling badly for a day or two, and came there and was taken sick. But as to the water, a part of it came from a well below the hotel. I was never able to investigate this, but I wondered if the excreta could get into the well. The well was below and in front of the hotel, and the water was brought to the hotel every day; I cannot say what it was used for.

THE PRESIDENT. If there is nothing else to be said upon this interesting subject, I would like, before we proceed to the next business of the afternoon, to ask the Association

to act upon the name of one gentleman, omitted when the report of the Committee was made.

The name of Dr. J. S. Sanborn was then proposed for membership in the Association, and he was unanimously elected.

THE PRESIDENT. The next business on our programme is the report of Dr. Abbott.

Boston, April 27, 1893.

To the Massachusetts Association of Boards of Health:

GENTLEMEN,—At the last meeting of this Association a committee was appointed to report upon such questions as might be referred to them, relative to the subject of mortality statistics, and as a special duty assigned to them, the following topic was suggested: "A Uniform Method for Estimating the Populations of Cities and Towns in Intercensal Years."

The primary importance of the subject of vital statistics to boards of health is recognized in the following language by one of the foremost of American sanitary authorities: "My observation of the progress of public health work in this and other countries for the past twenty years, leads me to believe that this progress, in any locality for any considerable length of time, depends upon the completeness of its vital statistics, and the use that is made of them." (Dr. J. S. Billings, in *Transactions of American Public Health Association*.)

A better text could scarcely be found as an introduction to thorough and careful work in this direction.

Since all correct deductions relative to mortality rates must depend for their accuracy upon the number of the population, with which the number of deaths is compared, and since we only know the number of the population in the census years, it is important that we should adopt some uniform method for estimating the population in the years intervening between the taking of the census.

Your committee has examined the different methods employed for this purpose, and has also obtained the advice of eminent authority upon the subject (Dr. J. S. Billings), and unanimously recommends that the Association should adopt the rule which was advised by Dr. Wm. Farr for the estimation of the population of England in intercensal years, and that is, that the known rate of increase of an intercensal period shall be applied to each following year in which the rate is not known. They also recommend that this method be applied to cities which had a population by the last census of more than 30,000 inhabitants, and that for smaller places the rule to be adopted of adding for each succeeding year one-fifth of the difference between the last state and national census.

By the term "rate of increase" in Dr. Farr's rule, the geometric rate is always intended. It has been a common custom to estimate the increase of population as constant for a term of years; by this method the increase between 1890 and 1891 would be the same as that between 1894 and 1895. Such, however, is not a natural method; the increase in a city of 100,000 increasing 2 per cent. annually should be greater when that city has arrived at the year 1894 than when it began the five-year period in 1890.

The error of estimating by an arithmetic rate is similar to the assumption that simple interest and compound interest will produce identical results.

We would also recommend that, for the obtaining of rates of increase of previous periods, short terms be employed instead of long terms, *i. e.*, five-year periods instead of ten or twenty-year periods. In this respect we have an advantage over England where the census is taken only once in ten years.

We are aware that no method of computation will produce perfect results, especially in a country where the increase from immigration is constantly greater than the natural increase resulting from the excess of births over

deaths. Estimates of the population of England for the last year of the intercensal period differed by more than a half a million, or about two per cent. of the population, as estimated for the same year after the census had been taken. That of Massachusetts by 75,715, or 3.5 per cent. after four years, but in either case the estimates were nearer the truth than any estimates which were based upon such uncertain data as the assessed polls, school children, number of names in the city directory, etc. Let us now apply the two methods, the arithmetic and the geometric, to a given instance, taking as an example a city of 400,000 inhabitants in 1885 which has increased between the two censuses of 1885 and 1890, from 400,000 to 450,000. What is the rate of increase under each method, what is the population of each year under each method, and what should be the population of 1891 under each method?

The figures may be stated as follows:

Years.	Population Arith. rate.	Population by Geometric rate.	Difference.
1885	400,000	400,000	0
1886	410,000	409,534	466
1887	420,000	419,296	704
1888	430,000	429,291	709
1889	440,000	439,524	476
1890	450,000	450,000	0
	Arithmetic rate of increase. 2.5 per cent.	Geometric rate of increase. 2.3836 per cent.	
1891	. . .	460,726	. . .

By these two methods the rate of increase of Boston for the period 1885-1890 was as follows:

Arithmetic rate, 2.976 per cent.

Geometric rate, 2.813 per cent.

and the estimated populations for the next five years would stand as follows:

Years.	Est. Pop. by Arith. rate.	Est. Pop. by Geomet. rate.	Difference.
1890	448,477	448,477	0
1891	461,823	461,092	731
1892	475,168	474,062	1106
1893	488,513	487,397	1116
1894	501,858	501,107	751
1895	515,203	515,203	0

The rates of increase (annual) for the twelve largest cities of Massachusetts, together with the estimated population for the present year are as follows :

Cities.	Rates of increase. Geometric.	Estimated population. 1893.
Boston,	.02813	487,397
Worcester,	.0436	96,217
Lowell,	.0392	87,191
Fall River,	.0552	87,411
Cambridge,	.03258	77,100
Lynn,	.03973	62,636
Lawrence,	.02817	48,535
Springfield,	.0329	48,684
New Bedford,	.0405	45,886
Somerville,	.0602	47,850
Holyoke,	.0502	...
Salem,	.0186	...

We recognize that there must be exceptional instances of phenomenal growth of cities and towns, and occasional instances in which local conditions may lead to a marked change in the rate of increase in a single year, and sometimes a decrease may occur, as in the city of Lawrence in the interval between the censuses of 1880 and 1885. For all such cases due allowance should be made. We therefore consider the subject of sufficient importance for the appointment of a standing committee to which such cases should be referred for adjustment.

S. W. ABBOTT,
E. FARNHAM,
W. H. CHAPIN.

DR. FIELD. I should like to ask Dr. Abbott if he estimates the increase of the population of cities in January or in May?

DR. ABBOTT. The census was taken about the middle of the year, May or June, and the estimates are for that time in the year. Of course, at the beginning of the year the population would be somewhat less and at the close somewhat greater, so that the mid-year time may be considered an average. In England the census is taken, I think,

very quickly, perhaps in one week or a few days' time in the month of April, and in order to get the mid-year population there they always rate ahead three months at the same rate.

DR. FOX. I was wondering if you made your estimate there as compound interest is reckoned?

DR. ABBOTT. No; only once a year.

MR. NEWCOMB. In Salem our city clerk acts as a registrar. So far as typhoid fever is concerned, this year we have been fortunate. There was a slight appearance of it in the winter, and at the meeting in January, I was very much interested in the statement made about ferreting out this disease through milk, as mentioned by Prof. Sedgwick. Our condition at present is remarkably good. I think we have only one typhoid case (and that not a severe one) in our hospital. We have but one case of scarlet fever and one of diphtheria, which I think is a pretty good condition for a city of 31,000 inhabitants.

THE PRESIDENT. I should like to call the attention of the Association to one matter which troubled somewhat the committee of arrangements, and that is the absence of a general interest on the part of the members of the Association, not in the discussion, not in their presence at the meeting, but in the preparation of the business of the meeting—that is, subjects for discussion. I think the Association does what generally happens where an Association has a very able committee,—they are very much inclined to leave the whole work of the Association to the committee. Now, Dr. Durgin has certainly, with his committee, provided the Association with a most excellent programme, but there must be in almost every city or town in the Commonwealth some topic of very distinct interest which would also interest the boards of health of other cities and towns, and I think it is very desirable that those peculiar topics should be brought to the attention of our Association, and should be made matters of discussion.

To mention one fact, it may be known that very important public works have been undertaken, or are now being undertaken in regard to the disposal of sewage matter. The city of Brockton is entering upon a very important experiment in that direction. I think that questions of that sort in which a community is directly interested can be brought up, and that they would be matters of very great interest to the Association. They might be brought before it for discussion with some simple presentation on the part of the local board of health, suggesting the questions to which they desire to call attention; and I desire to say that the committee having that matter in charge would welcome any suggestions from the various members of the local boards.

DR. DURGIN. I do not know that I ought to say anything in this connection, but the President has alluded to a subject to which I might add one word, and that is, the preparation for our meetings. Judging from past experiences, there seems to be a hesitancy about asking the Association to meet in the several cities and towns and in offering papers and subjects for discussion, with members so widely scattered.

It sometimes happens that we do not know where we are to meet or what papers we shall have, until a few days before regulation time for the meeting, and then it requires great activity to get things in order for the meeting. I would suggest that all invitations to meet in places, be given at the last preceding meeting, and that all members use the utmost freedom in offering papers and subjects for discussion. It will aid the committee very much, indeed. I want to say also, in regard to our publications, when any member of the Association does not receive his copy, if he will send word to me, I will see that he has it. We need a corrected list of members every three months and each one should see that his name is correctly enrolled on the Secretary's list.

DR. DAVENPORT. Mr. Chairman, if there is no subject before the meeting, I should like to inquire how general the practice is of reporting cases of whooping cough in towns and cities, and if they are reported, whether it seems desirable, that they be reported to school committees, or anything done to prevent the spread of the contagion.

DR. WOODWARD. I can answer that for Worcester. In some contagious diseases, as diphtheria, scarlet fever, typhoid fever and measles, we require a report from physicians. Other diseases such as chicken-pox, mumps, whooping cough, etc., we simply notify the schools to exclude the children so long as the symptoms remain, and we do not require a certificate of recovery on return. The reason that we do not is that we have made a total failure in trying to do anything with measles, and we hesitate to make the attempt with any other disease.

DR. DURGIN. We have very few cases of death from whooping cough, and I do not believe that we could enforce a regulation requiring whooping cough to be reported. We have in times of epidemic successfully enforced requests to report measles, but where there are a few cases of measles I am afraid the doctors won't report them very promptly.

THE PRESIDENT. There is one subject that is of very great interest, certainly so far as the records of the State Boards of Health show, and it is a matter of very great importance. I scarcely know when a subject makes more trouble for the local board of health, and the question has been given to me in this form: Under what circumstances is it advisable to close a school in consequence of an epidemic? And is it advisable to exclude particular scholars from that school? That is a question that certainly must arise in about every community in this State, and when it does arise I can testify that there is nothing that produces more trouble. I would suggest that it is a very desirable thing for the Association to appoint a committee to consider the subject and report to the next meeting of the

Association. It will then be understood that we shall have something for discussion.

DR. DURGIN. I move that the chair be authorized to appoint a committee of three for the purpose which has been stated, and that the committee report at the next meeting.

(The motion of Dr. Durgin was seconded and adopted.)

DR. FARNHAM. Has the local board any power to close the schools?

DR. DURGIN. I do not know, but I am under the impression they have no authority to close the school. Advice, however, is frequently asked, and whatever the board of health advises is usually done by the school committee without hesitation.

DR. FARNHAM. That very request has been made to me this morning by the superintendent of schools, and all I could say was I thought the local board of health had no authority to close the schools.

DR. FIELD. I am inclined to think if that question arose in Lowell, we should say that the school was a common nuisance, and under the local laws of the board of health we would have power to close that school. When contagious disease comes into a school, it is a nuisance and can be abated as any other nuisance can be. Of course, I may not be right, but that is the view I should take of it. It is a cause of nuisance, and as the statutes require a nuisance to be abated, I think I am correct.

DR. WOODWARD. That question came up in Worcester last year and we went through the whole thing. Whether we had a right to close the school or not was pretty doubtful. We found that under the statutes the school buildings were under the direction of the district police. Possibly under the general law of the board of health we might have closed the schools. What we did was to send a communication from the board of health to the school committee, saying that we considered the Dix street school a source of danger to the community, and immediately the school board passed an order directing the

superintendent of schools to close any schoolhouse upon the recommendation of our board of health.

MR. CAREY. Mr. President, in Brockton we had a little experience of that kind two years ago. It was nearly vacation time, and the school committee requested us to close two of the schools; the request came from them. We had only a little while longer before the vacation, and we ordered the schools closed by their request. Of course, the attendance of the school had fallen off very largely. Referring to the matter of the Association meeting in different cities, I think when Brockton gets in shape to have the Association visit there, we shall be very glad to have them come there. We are just commencing, as the President has said, on an important work, and hope to make a success of it, and we want to get in shape to show the Association something that they would be glad to see. We shall certainly be very glad to have them meet with us.

THE PRESIDENT. I will appoint as members of the committee which you have constituted, Drs. Clark, Fox and Sawyer.

There being no further business to come before the Association the meeting adjourned.

EXAMINATION OF SPRING WATERS.

In view of the general anxiety of the public to secure pure water for drinking purposes, the following extracts from the Report of the State Board of Health for 1891 will be found particularly interesting. The Report says:

"There is a large quantity of spring water sold throughout the state, particularly in cities and towns where the regular water supply is thought to be unsatisfactory, or where the water, as is not infrequently the case with surface water supplies in the summer time, has an unpleasant taste and odor.

"A considerable number of these spring waters were collected for examination during the summer of 1891, and at the same time a careful inspection of the surroundings of the springs was made, to discover possible sources of pollution. Not only is there a large sale of spring waters as such, but there is also a large amount consumed in bottle form, as soda water and other effervescing drinks.

"As the result of this investigation, it was found that some of the springs were situated in regions nearly or quite free from population, where the land was not under cultivation, and the chemical examinations of these waters showed them to be of the highest purity. Other springs were situated in populous districts, or had near them direct sources of pollution, and the water gave evidence, on chemical analysis, that it had, in its course, received a large amount of drainage from sinks, cesspools, privies or stables. In most of the springs of this character which were examined the water showed, however, a high degree of purification by filtration through the ground.

"Normal waters have been defined to be those which have not received any waste products of human life. They are, as a rule, confined to the water-sheds with population. Any access of chlorine above the normal of the region in which the water is found is a measure of the amount of waste products, human and animal, that the water has taken up. But the evidence of contamination based on the chlorine alone does not tell us whether the source of pollution is near by or remote. This information is obtained from the determination of the nitrogen, which, in freshly polluted water, is present in the form of organic matter (albuminoid ammonia) and free ammonia, while in water which has percolated under favorable conditions through porous ground the nitrogen is all oxidized and appears in the form of nitrates.

"It is easily possible for a spring water which has somewhere in its course received a large amount of polluted drainage to be organically much purer than another in which the amount of contamination has been much less. The purifying power of porous ground, in which organic matter is exposed to bacterial action, with access of air, is sufficiently great, under favorable conditions, to convert completely organic into mineral matter, as far as chemical analysis can indicate.

"In the process of filtration through porous ground, whereby organic matter in water is oxidized, there may also be effected a purification as regards disease germs. This latter and most important purification may be due to the removal of the germs by the mechanical straining of the water at an extremely slow rate through the ground, or to the death of the germs, owing to unfavorable conditions for their life in the filtering process. While we cannot always know in any particular case which of these processes may have been the principal factor in the purification of the water, we know that the conditions of perfect mechanical filtration (whereby all suspended matters are removed from the waters), and the conditions of perfect chemical purification, are those also most favorable for the complete removal of bacteria.

"Although water badly contaminated with sewage or the wastes of human life may be purified by thorough filtration so as to be free from organic matters and from bacteria, yet in cases of ground waters of this origin and character we seldom feel complete security that the conditions of perfect filtration will always exist. A long-continued rainfall, for instance, may result in more rapid filtration and consequently less perfect purification; or the creation of new sources of contamination, nearer the spring, may result in its dangerous pollution.

"It is for such reasons that a certain suspicion always attaches to ground waters, which have at any time in their history been seriously polluted. The use of ground waters, whether springs or wells, in built-up communities, should therefore be avoided, for we have no control over the conditions of filtration, and have no means of knowing (except by constant vigilance in the examination of the water) when a water hitherto well purified may become injuriously impure. The danger from the use of ground waters in populous regions increases with the increase of population, and with the nearness of the sources of pollution to the spring or well.

"We may often find a large number of harmless bacteria which have come from the air or from dust, and which would not be found in the water if better protected. A favorable construction is, of course, to be put on the low numbers of bacteria, since they show that few bacteria of any kind are present and that the conditions under which the water is filtered in the ground are favorable to its purification."

The Massachusetts Association of Boards of Health

WAS ORGANIZED in Boston, Mass., on March 19, 1890, with the following objects: The advancement of sanitary science in the State of Massachusetts; the promotion of better organization and co-operation in the local Boards of Health; the uniform enforcement of sanitary laws and regulations, and the establishment of pleasant social relations among the members of the Association.

All persons holding appointments as members of a Board of Health in a Massachusetts city or town, the executive officers of such a local board, and the members of the State Board of Health, and such other persons as may be elected, are eligible to membership. The annual dues are three dollars.

This Association has four regular meetings each year, the annual or January meeting always being held at Boston.

THE JOURNAL

OF THE

Massachusetts Association of Boards of Health

IS A QUARTERLY PUBLICATION, containing the papers read at the meetings, together with verbatim reports of the discussion. It will also contain from time to time interesting contributions from writers of the highest standing in their profession. It affords a convenient medium for the interchange of information and experience between its members, who are so widely separated as to find frequent meetings an impossibility. Every addition to its subscription list, therefore, is a material aid in extending its sphere of usefulness. All members of the Association receive the JOURNAL in return for their annual dues; to all others the subscription is one dollar per annum, in advance. If upon inspection of the accompanying copy you feel so inclined, we should be glad to receive your subscription. The JOURNAL will also be sent to the principal Hospitals, School Boards, Doctors, Architects and Boards of Health.

The publishers of this journal will endeavor to place before its readers the advertisements of reliable firms dealing in Sanitary Goods and Apparatus, Spring Waters, and articles needed by Schools, Hospitals, Architects and Physicians. It is hoped that they may receive a share of the patronage of those who may require anything in their different lines.

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LOUISVILLE, KY., January 1, 1889.

The letter below is published for the information of Druggists who sell alcoholic liquors. Dr. D. W. YANDELL, eminent as a Surgeon and Physician, not only in the United States, but in other countries, recently addressed the letter, of which the following is a copy, to a medical friend in Philadelphia. The letter tell its own story :

LOUISVILLE, KY., Dec. 1, 1885.

MY DEAR DOCTOR :

In answer to the enquiry as to the comparative value of brandy and whiskey in therapeutics, I have briefly this to say : After a long and very careful comparison, at the bedside, of the effects of the best Cognac brandy and the best Kentucky whiskey, I am satisfied that the action of the latter is as speedy, pleasant and enduring as that of the former. There are, as you already know, many fine whiskies manufactured in this state under different brands. Among them I may name the BELLE OF NELSON, as being thoroughly well made, honest, straight and mellow, and for these reasons being specially fitted as a remedy where alcohol is indicated.

Always faithfully yours,

D. W. YANDELL.

For the information of the trade generally we append a copy of a letter from Captain Theodore C. Tracie, who was for ten years connected with the U. S. Internal Revenue Service, and was thoroughly familiar with the methods of distillation pursued in Kentucky and elsewhere. In his capacity of U. S. Int. Rev. Agent, in charge of the Division of Kentucky and Tennessee, he made frequent examinations of distilleries, and the statement made by him is entitled to high consideration :

LOUISVILLE, KY., January 1, 1885.

Mr. Robert J. Tilford, Pres. Belle of Nelson Distillery Co.

DEAR SIR : For several years it was my duty as Internal Revenue Agent to examine the Distilleries in Kentucky, and other States. As I reported, a few years ago, after making a careful examination of the methods pursued in the distillation of the BELLE of NELSON Whiskey, I found the article to be literally a pure hand-made Sour Mash Whiskey—every stage of the process being similar to the old-time method—no large tubs, patent rakes, yeast, or cold slop being used, fermentation being produced by natural and unaided causes. The proportion of rye and malt to corn used in the formula was about 33 per cent., which made the product very expensive, but it produced a whiskey which is all you represent it in purity, smoothness, and incomparable flavor, having no superior in the state. I can heartily endorse the high encomiums which have been passed upon this well-known whiskey for many years.

Yours truly,

THEODORE C. TRACIE,

Late U. S. Int. Rev. Agt.

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Official Journal

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SUBJECTS:

- 1st. The Authority to Close Schools during an Epidemic.
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VOL. III.

SEPTEMBER, 1893.

NO. 4.

QUARTERLY MEETING.

THE meeting was called to order at about 4:30 P. M. by Dr. H. P. Walcott, the President, who called upon the Secretary to read the record of the last meeting. The record was read and approved. The name of Dr. Frank C. Walker, of the Taunton Board of Health, was then presented for membership, and he was duly elected a member of the Association.

THE CHAIRMAN. Is there any incidental business to come before the meeting at this time? If not, the next business in order is the report of a committee upon closing schools in seasons of epidemics.

DR. SAWYER, of Gardner. Mr. President and Gentlemen: I do not know that it is necessary to offer any apologies for the accommodations that we have had to-day. You will understand that the house was closed a week ago, and it was only by making special arrangements that we were enabled to come here at this time. The proprietor has done the best he could with his table and the other accommodations that we have had under the circumstances, not having any help, and the house being practically closed for the season. I feel very sorry that we have been so unfortunate in having such a cloudy, gloomy day, as quite a good many of those who came wanted the privilege of going up the mountain. I know that you all would have enjoyed the ride here and a trip up the mountain with the beautiful prospect to be had from the top, which would not have been soon forgotten, but we are unfortunate in the day. The only thing that we can do is to blame the

present administration, I suppose, as that is to blame for all the unfortunate conditions that are surrounding the country at the present time. I see some of the Democratic members do not quite agree with me.

The committee that were appointed at the last meeting to investigate this matter of closing the schools during epidemics of contagious diseases have attended to that duty, but I think that they are not ready to offer any suggestion or any plan which can be universally carried out. The more the matter is studied and discussed the more difficult it seems to arrive at any one plan that will commend itself for the use of cities and towns. In the cities where the scholars congregate in streets and in alleys and courts and are brought into intimate association with one another, as was said at the former meeting, where "they bite each other's apples and chew each other's gum," perhaps it would be safer for them if they were in the school-room. At the same time in the country where, upon being dismissed from school they separate to their homes, they are necessarily apart from each other a great deal, and under such circumstances as that it might be just as well perhaps to close the school, and thus prevent the contagion from spreading. There are arguments, of course, on both sides. It was generally discussed, and very interestingly so, at our former meeting. I am not going to take up very much time myself in discussing the matter, because Dr. Tobey has gone into it very thoroughly and has spent considerable time and pains, and can lay the facts before you. The statistics, as far as figures go, would seem to throw the evidence all one way, that it does not matter about the closing of schools, that it is not necessary to do so, but at the same time there are occasions when you cannot depend altogether upon the figures. I was very much surprised when I found out what result Dr. Tobey had derived from his figures, as I think you will be when you find the per cent. of scholars that contract epidemic diseases in school compared with those who contract them out of school. It seems to me quite a remarkable fact brought out by the figures, at the same time I think there is a public sentiment which governs that matter a great deal. Just as soon as an epidemic in infectious diseases breaks out in a school, you know that parents begin to take their children out; they dislike to send them, and they take them out consequently every day or two, and it really becomes a neces-

sity for the Board of Health to close that school; and, as was remarked at our former meeting, when they begin to take them out like that they begin to take them out of the Sabbath-schools, and naturally if the scholars in the Sabbath-school begin to decrease to such a degree that it is not profitable to carry on the Sabbath-school, that has to be closed. One is very apt to follow the other.

I am simply arguing on this side of the question to perhaps bring out some facts in that direction in a different way from those that will be brought out by Dr. Tobey, because his arguments are very strong as regards not closing the schools.

Dr. GEORGE L. TOBEY, of Lancaster. Mr. Chairman and Gentlemen: I have little to say outside of the figures shown on the charts. Through the kindness of the Secretary of the Board of Health of Clinton I have been enabled to examine the records of the Board, and the figures which are exhibited in the tables which I have placed on the wall are copies from the record of the Board from April, 1885, to December, 1892, covering practically eight years. I have taken diphtheria, scarlet fever and the measles. In the first column is the whole number of cases of diphtheria occurring in each month of the year in children of school age, i. e., from five to eighteen years. In 1885 there were five cases of diphtheria, fifteen cases of scarlet fever, and seventeen of measles. In 1886 there were five cases of diphtheria, 118 of scarlet fever and three of measles. In 1883 there was one case of diphtheria, 85 cases of scarlet fever, 38 of which were among children of school age, and eight cases of measles, four of which were among children of school age. In 1886 there were 118 cases of scarlet fever, 46 of which were among school children. In 1888 the number was much smaller. In 1889 the number was also small, but in 1890 you will notice there were 170 cases of scarlet fever, 76 of which were among children of school age; diphtheria 13 cases, eight of which were among children of school age. In 1891 there were 147 cases of scarlet fever, 59 of which were among school children. The chart at the right is a summary of the whole. Here in the first column is the number of cases in children of school age, in the column next to the last is the census of the school children in the town for each year, and the last column indicates the per cent. of school children affected by contagious diseases. The

largest per cent. comes in 1890, which is 4.2 per cent. In the whole eight years there have been 37 cases of diphtheria, 18 of which were among school children, or about 50 per cent. Six hundred and one cases of scarlet fever, 248 of which were among children of school age; 185 cases of measles, 85 of which were among children of school age, which makes a total of 823 cases in the eight years. The number of cases of contagious diseases among children of school age have been 351, and the whole number of pupils of school age in that time have been 14,799, making the per cent. of contagious diseases among children of school age 2.3 per cent. On the charts are included July and August, which are not school months. The average attendance upon school has been 90 per cent. or 13,319 pupils, by taking out the 36 cases which occurred in July and August when there were no schools it would make 212 cases, which brings the per cent. down to about 1.6 per cent. In 1890 there were the largest number of cases. In October, November and December there were 118 cases, only 48 of which occurred among children of school age. The whole number of cases has been 823. The whole number of cases in children of school age is 351, or 42 per cent. of the whole, so that taking the actual number of cases that occurred in the school year and the 90 per cent. of attendance brings it down to 1.6 per cent., which is certainly very much smaller than I had expected.

If in the town of Clinton with 12,000 inhabitants it has been shown by the records of the Board of Health that but 1.6 per cent. of attendance or 2.3 per cent. of the whole number of children of school age has been affected by contagious diseases—and if Clinton can be taken as a fair sample of other towns—it does not seem advisable to recommend the closing of schools in times of epidemic diseases, *unless at any time* it can be shown that in a certain school or a certain district a considerable per cent. of such school or district has become affected then, of course, there would be no question as to the advisability of closing such school or schools. The following is a summary of the table which Dr. Tobey exhibited:

	School Age.	Diphtheria.	School Age.	Scarlet Fever.	School Age.	Measles.	Census.	Per Cent.
1885	(1)	5	(4)	15	(3)	17	1,750	.5
1886	(1)	5	(46)	118	(1)	3	1,774	2.7
1887	(3)	1	(38)	85	(4)	8	1,729	2.4
1888	(3)	4	(7)	22	(54)	106	1,808	3.5
1889	(8)	6	(8)	18	(3)	6	1,830	.8
1890	(2)	13	(76)	170		1	1,960	4.2
1891		3	(59)	147	(18)	37	1,971	.4
1892			(10)	26	(2)	7	1,977	.6
	(18)	37	(248)	601	(85)	185	14,799	Av. 2.3

DR. SAWYER. Mr. Chairman: To argue for a moment on the other side, I would like to bring up the epidemic of the Dix Street School in Worcester. About that particular epidemic a paper was presented to us, so that you are all more or less familiar with it. It seems to me that it would have been good judgment and that it would have materially decreased the number of cases of diphtheria if that school could have been closed long before it was. I do not know what Dr. Woodward will say about that, but it seems to me there is an instance, and a striking instance, where the good effect of closing the school would have been immediately seen.

THE CHAIRMAN. Gentlemen: The committee have placed this subject before you, and in connection with the discussion at the previous meeting of this Association, I think all the bearings of it, so far as they can be presented by the committee, must be very distinctly before you. It is a matter of the greatest possible consequence to every Board of Health in this State, and I hope it will be discussed by those interested in the question.

MR. R. L. NEWCOMB, of Salem. Mr. Chairman: I have been interested for the last six years in the sanitary work of the city of Salem. Within that time I have noticed fewer cases of scarlet fever and diphtheria were reported in vacation time, and figures can be shown to that effect.

DR. TOBEY. I would like to ask if those cases which were reported were among school children?

Mr. NEWCOMB. Seventy-five per cent., sir.

Dr. SAWYER. I would like to have the President call on Dr. Rice, of Fitchburg.

The CHAIRMAN. Dr. Rice, we should be very glad indeed to hear from you.

Dr. CHARLES H. RICE, of Fitchburg. I have not much to say, Mr. Chairman, but in reply to the gentleman from Salem, every one knows that contagious diseases are not as numerous and do not run as much of a course in warm weather, when we have vacation generally for school children, as in other seasons of the year. Most of the schools are closed during July and August, when we hardly ever have many cases of contagious disease. That may answer his argument perhaps. I believe that schools should not be closed on account of contagious diseases unless the school house itself is at fault, as it was in Worcester, as I have understood. That would make another matter, I think, as the gentleman from Salem said they had more cases reported during the school months than any other time. I should say that it was the season of the year and not the closing of the schools that reduces the number of cases of contagious disease.

Mr. NEWCOMB. I do not understand that to be an inviolable condition, because I have understood in the spring and fall we have more diseases reported than during July and August, fewer of them perhaps on account of the closing of the schools, though those are not the only months when the schools are closed. It is only a part of July and the whole of August that the schools are closed there. We have vacations at other times in the year, but outside of that the fact yet remains that in the spring we get more of diphtheria, as we also do of typhoid in the fall; but that is neither here nor there. In the spring months, we get more scarlet fever and diphtheria than any other time in the year, and at that time the schools are in session except for a week in April. I would like to say also, Mr. Chairman, that I am not arguing this matter at all. I simply mention facts as they occurred to me.

Dr. WOODWARD. Those of us who were present at the meeting held in Newton some two years ago will remember a paper presented by Dr. McCollom where he showed that throughout the whole State of Massachusetts scarlet fever and diphtheria increased steadily up until the

summer vacation and then practically stopped until the schools came in again in the fall.

The Dix Street School in Worcester has been spoken of. That school house had faulty ventilation. It was one of the healthiest schools in the city until diphtheria was introduced. The school was apparently healthy, but diphtheria having been once introduced it spread like wild fire among the children until we had forty cases. Then as soon as we found that we had a considerable number of cases we closed the school, and stopped the attendance. The school showed no considerable sickness until the disease was introduced. I admit the ventilation was very faulty from the start.

The CHAIRMAN. Is there any thing else to be said upon this subject?

Dr. F. A. FOSTER. Mr. Chairman: It has been brought to my attention to-day by a gentleman from Waltham that his daughter has just been sick with diphtheria, something we have not had in Waltham for some two or three months, I think. He suggested that he could not give any cause for it, and our agent has not been able to. He thought that possibly there might be something connected with the school whereby she had taken the disease, but as no other case has been reported, and this was something like two weeks ago that she was first taken, we can find no cause for it, but he suggested this thing to-day, and I thought perhaps it would not be out of the way to speak of it here. I believe in our schools the teachers are requested to take all pencils and put them in their desks and in the morning distribute them amongst the children. The child of Mr. Jones to-day has the pencil of the child of Mr. Smith yesterday, and so it goes on that way. Would it not be for the interest of all school children for the Board to go to the Superintendent of Schools or by an act of the Board (if possible) compel her to let the pencil remain upon the desk of the child until it is used up and not have it transferred from one child to another? Because the child who has one pencil to-day has some other child's pencil to-morrow, and in that way we might lessen the tendency to spread of contagious diseases. I simply make that point as one gentleman spoke in regard to chewing gum, etc.

The SECRETARY. The usual custom is to have one cup for the whole school to drink from.

Dr. F. A. FOSTER. Exactly.

The CHAIRMAN. If there is nothing more to be said upon this subject, gentlemen, we will proceed to the next paper, which is a discussion of the new law relating to plumbing, to be opened by Inspector John F. McCartney, of Worcester.

Mr. JOHN F. MCCARTNEY, of Worcester. Mr. President and Gentlemen of the Massachusetts Boards of Health: In opening the discussion of the new State law passed by the last Legislature, I think it will be well if I should read to you in full the law as it was passed, that we may the more freely and intelligently discuss the merits and demerits of it, and its reasonable or proper interpretation and application, so if you have no objection I will proceed to read the law.

(Mr. McCartney then read the act relative to licensing plumbers, chapter 477, approved June 10th, 1893.)

I do not know really, gentlemen, why I was selected to open this very important discussion, because I think it is of momentous import to the Boards of Health throughout the State, but I suppose the committee thought they would select a target, and that I would perform the part of a target, and therefore will be as brief as possible in giving my interpretation individually of the new State law which has recently been passed.

I understand the law to mean that hereafter all plumbers or men desiring to engage in the business of plumbing, either as master or employing plumber or as a journeyman plumber, shall receive a license therefor before conducting such business. In the first place, the law specifies that there shall be a Board of Examiners to examine all applicants for conducting such business within the Commonwealth, who desire to engage in that business after September 10th, three months after its passage, and that Board shall comprise the Chairman of the Board of Health, the Inspector of Buildings, if there is an Inspector of Buildings, who shall be *ex officio* member of that Board, and a third member who shall be appointed by the Board of Health, and also be a practical plumber. If there is no Inspector of Buildings in a city or town of 5,000 inhabitants or more throughout the State, then a second mem-

ber shall be appointed by the Board of Health who shall also be a practical plumber, and whose compensation will be equal to the third member. That being the fact, it strikes me that the law is intended, in the first place, to place all the responsibility upon the Boards of Health where they could possible do it. The City of Boston is exempt from one particular section, that is the section relating to the filing of plans and the issuance of a permit for those they claim they have there already, and do not desire to be molested, or do not desire to be obliged to change the present rules and regulations which they have. In the City of Boston the Inspector of Buildings has charge of the plumbing regulations. I do not know that in any other city of the State the Inspector of Buildings has charge of the plumbing regulations, therefore I believe this law affects every city or town of 5,000 or more inhabitants in every particular except Boston, and that is exempt from that particular section relating to the filing of plans, the issuance of permits, etc. This Board which the State law provides for has to examine all applications which may be submitted to them from the Board of Health. In other words, a man desiring to apply for a license to conduct his business either as a journeyman, master or employing plumber must first apply to the Board of Health; that application is referred to this Board of Examiners, and they examine him as to his qualifications for conducting such business. If he is qualified properly, they so certify to that Board of Health, and the Board of Health then shall issue a license to him to engage in the business in any city or town of 5,000 inhabitants or more. That license is taken with him and will hold good in any city or town of the State wherever he may go. It may be that he moves from the vicinity or locality where the license was originally issued. He can have it renewed by any other authority in any other city, and so it has force throughout the State. He goes into another locality, and he simply submits his license and it is renewed by that department. That being the fact, it leaves, in my estimation, the standard of examination somewhat incomplete. That is to say, a man might apply for a license in Worcester and might not be qualified in the city of Boston or in the city of Cambridge. It is trusting everything entirely to this local Board of Examiners, and yet the Board say

their license shall have force throughout the State. He can engage in business anywhere in the State of Massachusetts in any city or town of 5,000 inhabitants or more. I contend that there will be some difficulty in enforcing that particular point for the reason, as I said before, if a man is not qualified in the city of Worcester, he may go to the city of Cambridge and be qualified, and that being the case, he can then go right back to Worcester and engage in his business. There seems to be a little injustice, or unfairness, or a little inconsistency about it.

Right here I would say that the wisest means out of that difficulty would be to have a supervising head either appointed by the Massachusetts State Board of Health or by some other authority which would make a standard of examination that could be applied in every city and town of this State. I think it is a wise suggestion that I make this afternoon. It does not particularly affect the law only in that sense, that a man might come into the city of Worcester and apply for a license, and he might be disqualified. His examination might not be satisfactory to the examiners in that locality on account of his character, or anything else concerning him, and still he might go down to Clinton and pass a very satisfactory examination. Then he could come back into the city of Worcester and engage in business. There may be some objections, and I think there are objections raised already.

QUESTION. One moment. In making this examination how do they propose to make it, by something similar to a civil service examination, writing it all down on paper? I know several good plumbers, fine workmen, but if you ask them to sit down to a written examination they could not do it. We have men in Worcester, Clinton and in other places, who, if they were required to take that examination, would be disqualified, because they could not write them, but they are practical workmen, practical plumbers, good plumbers, who make just as good a job as any men in the State, but still they are no arithmeticians, no writers or anything like that. I for one would like to know how those examinations are going to affect those men who are practical plumbers as you call them, and go from one town to another? If a man comes from Cambridge to-day and goes to Fitchburg, and is not able to take an examination, he is disqualified according to that.

Mr. MCCARTNEY. That is what the law says, and therefore I made that suggestion, at least, that there should be a concentration of the heads of these Examining Boards, if necessary, to decide upon a form of examination that they would consider sufficient to qualify a man.

Dr. LYNCH. Now, we have elected in Waltham one of our practical plumbers upon the commission.

The CHAIRMAN. I would like to suggest to the gentleman from Waltham whether it would not be better to have Mr. McCartney finish his statement?

Mr. MCCARTNEY. I was about referring to an objection that has been raised, and somewhat wisely, in regard to the towns. You will all understand, gentlemen, although a great many I talk with do not so understand it, that according to the law every city and town of 5,000 inhabitants or more, and every town which may have a system of water supply or sewerage, must have these rules and regulations. It meant to go further than simply to say that all cities and towns of 5,000 inhabitants. It also meant that if there should be a system of water supply or sewerage in a smaller town, this law would affect it. There is some objection raised on that point in regard to the wisdom of enforcing a law of that kind in those small places. Some may think it is too far reaching. They think that meant to give employment to an inspector of plumbing, for instance, who must be a practical plumber, with a salary, and not to be removed except for cause shown. They do not think they have work enough to employ them, and consequently they feel it is a little too far reaching, and there have been some objections raised to it.

I should say this much in regard to that, if that were the means of killing the law, as it were, if it really means killing the law, I would advise, if any change of the law was made, and those small towns be exempted, and "cities" inserted instead of "all cities and towns in said Commonwealth;" but my personal feeling in the matter is this, that I see no reason why the towns in Massachusetts should not be entitled to the benefits derived from a law which is intended to promote sanitary improvements, which will strengthen wonderfully the Boards of Health in reducing these preventable diseases. I see no reason why

it should not, if there is any good result to be obtained from it affecting the health of a town, because I consider a life in a town to be as dear to them as is the life of a person living in a city, and I do not consider that it ought to be a question of means, a thousand or twelve hundred dollars which it would necessitate in order to employ a man demanded by the State law. I do not think that would pay for a single life if such can be saved, and I think the gentlemen will all agree with me when I say that in country towns there is a vast field for improvement. It is establishing, as it were, in every town and city in this Commonwealth a school for the education and enlightenment of the people in sanitary matters in general as well as in sanitary plumbing. It would be a splendid thing, and I hope that the law as it is, as far as that is concerned, will apply, and I hope the people living in those localities will look at it in the same manner which I do. I do not know that they will, but I know it will result in great good to the State and to the Boards of Health, because, as I say, there are reasons why I think it ought to. If all the cities in this State are affected by this law and their plumbers are obliged to pass examinations, the people are enlightened in matters pertaining to the plumbing trade and in sanitary matters in general, till, as it were, all the booby men and the simplest men in that little town can operate their trade as they please.

Again, in those places suppose we have not master plumbers enough to be affected by a law of this kind, it will oblige us to appoint a plumbing inspector. Why? The reason in my mind, gentlemen, is this, and I have had some experience in the country towns of Massachusetts as well as in other places. Corporations and manufacturing establishments which have plumbing work to be done desire to have it done properly and practically, and they go into the cities for their work where they feel somebody is responsible and who will do for them a reliable job, thus taking from those towns the means that ought to be distributed in the towns in which they are located. I think with a law of this kind enforced in little towns at an expense even of ten or twelve hundred dollars a year, you will have good plumbing shops, and you will give those people reason to think they can have their work done thoroughly and satisfactorily in their own locality.

There are questions raised also in regard to the application of the law in cities where there is a building inspector. Now, gentlemen, I know that the law meant this, that the inspector of plumbing should be under the supervision of the Boards of Health in every city and town in this Commonwealth except in Boston. I know the law means just that. It is qualified in some sense, and it does not mean that where there are inspectors of buildings they shall have charge of the rules and regulations. It does not mean anything of the kind. It means in substance that the Board of Health shall have full control of the plumbing rules and regulations. They shall appoint an inspector, and they shall refer the revocation of a license to the Examining Board, but everything is practically in the control of the Board of Health, where it should be. That is my interpretation of the law, and I think you will all agree with me when you have read it thoroughly yourselves. I am simply an individual and give you my personal interpretation of it. I think it is a very good one, a first-class one in every particular except one, and I think that is this, in order to avoid the difference between the cities and towns in regard to the form of examination that would apply in the city of Worcester, in the town of Westboro or Clinton or in the city of Cambridge. I think it would develop a great deal of good, and it would certainly make this law a practical law, because it must be enforced if it is going to amount to anything.

I think I have already taken up too much time of the meeting, but I will give way now and answer any questions which may be asked by any members present. I do not consider I am capable of expressing an opinion as a lawyer upon the substance of this law, but I will give you the benefit of my experience in answering any questions which you may put.

Dr. SAWYER. I would like to ask you one question, and that is, the law provides that there shall be an Examination Board; it also provides that there shall be an inspector of plumbing. Is it necessary for that inspector or plumber to pass an examination? Can he be selected from any body?

Mr. MCCARTNEY. No, sir, I think not, doctor. He must be selected according to the State law, and be examined as to his qualifications.

Dr. SAWYER. Who is going to examine him?

Mr. McCARTNEY. The State Civil Service Examiners.

Dr. SAWYER. That does not apply in towns of less than 5,000 inhabitants. What are you going to do in that case?

Mr. McCARTNEY. In a case of that kind it is discretionary. I should imagine you had the privilege under this law to appoint your own inspector and qualify him, if you will, but he must be a practical man. That is the requirement of the new law—a practical plumber.

Dr. LYNCH. What is a practical plumber?

Mr. McCARTNEY. I should consider a practical plumber to be a man who practiced the trade of plumbing, who worked at it as a journeyman.

Dr. LYNCH. I have looked in the dictionary and I cannot find anything more than, "A man that works on lead." [Laughter.]

Mr. McCARTNEY. That is the literal meaning of the word. We have to take a word with reference to general use, and that is the way the word is used; of course, when the law was prepared these words were intended to mean certain things.

Dr. LYNCH. I suppose it meant that a man who had served his time at the plumbing business and was capable of doing any kind of work, but I have looked the unabridged dictionary over time and time again, and all I can find is, "A man that works on lead." I thought probably you might know a little more than that. [Renewed laughter.]

Mr. McCARTNEY. I do not. I do not claim to know any more than the dictionary by any means. I would say in answer to the questions by the gentleman just seated that every law is founded upon common sense, and I do not believe that the people who promulgated this law intended anything as "a practical plumber" except a man who is conversant with the practical points of plumbing in all its forms, a man who has practiced that trade, who has done work at the trade. He may either be a journeyman or he may be an apprentice in the business. If he has practiced the plumbing business and is conversant with the principles of plumbing relating to sanitary drainage, ventilation and adjustment of suitable water pipes in the house and the necessary plumbing arrangements therefor, I believe that under the law he is eligible as the third man on the Board, I do not care how many years he has been in the business. I do not want to say anything that

may be misunderstood in regard to this answer. I do not believe that any man thirty or forty years in the business can go into a house and do a job of plumbing unless he has practiced it; simply because he is conversant with the way in which men under him do it I do not consider is any reason why that man can work in a building and ply his craft. Therefore under the law I do not consider that a man who is an employing plumber and has never practiced the practical points of the business as a journeyman, no matter how many years that man has been in the business, is eligible under the statute law.

Mr. LYNCH. Another question. Supposing Mr. Smith or Mr. Brown goes to Worcester and desires to get a permit to do plumbing work as a practical plumber. He has a license from another place. Mr. McCartney is on the Board of Examiners. He examines that man as to his qualifications both as to the mechanical principles underlying sanitary drainage and as to his ability to do practical work. The man passes the first part of that examination satisfactorily. Mr. McCartney then sees him at a house working. He can tell in ten minutes whether he is a practical man or not. Suppose he sees that the man can do practical work; but supposing it was found on further investigation that that man never did a day's work of plumbing as an apprentice or journeyman. You surely must give him a license because he is able to do plumbing work. Nevertheless, is he a practical plumber?

Mr. MCCARTNEY. I do not consider that he is.

Mr. LYNCH. Well, you have examined him theoretically and practically and you would give him a permit to do work; he is capable, in your opinion, of going into any house and doing any ordinary job.

Mr. MCCARTNEY. I consider in answering that question, Mr. President, that that is a hypothetical case, a case where you assume incompetency on the part of the Examining Board to examine that man. [Laughter.] Under the law a practical man upon that Board is capable of determining, in my own estimation, whether he has qualifications or not. There are certain questions, there are certain principles which that man must know in order to ply his trade, and I dare say there will be no man appointed on the Board who is not capable of determining by examination whether that man is capable of practicing his trade or not.

Mr. LYNCH. I have in mind, Mr. Chairman and gentlemen, one man who was appointed on that Board in a certain city, not twenty miles from Princeton, who was not a practical plumber, that is, he never served his apprenticeship to the craft, but he was an employing plumber, a very intelligent fellow, and he had done work at times as a helper, and was able to do what you would call wiping a joint. He was appointed on that Board of examining plumbers. Now that man is to decide whether you or I or any other man who has spent years at the business is to work at the trade. My object in raising this question is this: Is there any phrase by which the word "practical" may be defined? The question has been raised in Boston. Such men as J. M. Tucker have been applied to to define the meaning of the word "practical," men who have spent all their lives at the craft of plumbing, and have replied that they are unable to define it. In this country they do not know what a "practical" man is. Mr. Brown spends six months as an apprentice at the plumbing business; he starts up a shop, and he works with his foreman, who is a practical plumber. Do you not think, Mr. McCartney, that there is some misunderstanding, some misconstruction of the word "practical" or liable to be in that case?

Mr. MCCARTNEY. Yes, I think so. The question has been raised already before I came here to-day.

Dr. LYNCH. Would it not be well for the statute to define that, as you have suggested, in some way?

Mr. MCCARTNEY. My suggestion in that regard as in reference to the other point is that some concentrated authority should be had in order to properly interpret the meaning of the law, and that can only be had, in my estimation, by having an executive head, a committee appointed by the Massachusetts Board of Health. There is no doubt, of course, if they will only do their duty, as I know they will, that they will try to enforce the law wherever it can be enforced, and my idea is that the Boards of Health of the State should appoint a committee, if necessary, to properly interpret the meaning of this law and application of it, and I think all the Boards of Health throughout the State would be relieved a great deal just at this time.

The question again has been raised, let me say before I sit down, as

to who should be licensed to practice, who should be permitted to work under the new law of those who have practiced their trade until the law was passed; that is, from now on they must receive licenses and be examined, etc. It is intended that all those now working at the business up to September 10th shall be permitted to practice their trade or engage in business without being affected by this law, you understand. Now then, it becomes a question who are the men you are going to decide who will be permitted to work under the law? They must be registered as practical plumbers. How do you know whether a man has done plumbing or not under the law? As you say, he may have worked a year or six months at the business of plumbing, and if he is entitled to a license, he comes in and registers and you issue him a license or certificate, and he is exempt under the law. That I consider an unfair thing, and I think in the beginning care should be taken that proper men be selected to conduct their business, and a man who is not fit to conduct that business should be excluded, and the examination should be of such a nature as to show their qualifications for conducting the business. That is a question that has been raised already, as you know. There are lots of boys, I may say, not nineteen years old, who are in the cities and towns all over this State who have worked six months or a year at the business, and they enter a house to do plumbing, but you can all see that they are not competent to do it thoroughly. I think it is wise that that thing be understood thoroughly, and that we have only such men as are journeymen within the meaning of the law. There is where the word has to be interpreted in order that the new law may be carried out.

The CHAIRMAN. Cannot you help us in this matter, Mr. Smith?

Mr. E. I. SMITH, of Waltham. Mr. Chairman and Gentlemen: I unfortunately belong to a profession which always sees a great many difficulties, and it has the reputation of always looking for trouble. [Laughter.] It seems to me that if the legal profession desired to find a statute which suggests trouble they might well be pointed to this one. [Renewed laughter.] There are many questions involved in the interpretation of this statute upon which questions one must have a great deal of temerity to risk any opinion whatever. In the first place, as has been suggested, what is the definition of the words "practical

plumber." How can you expect a lawyer to define these words when plumbers themselves cannot define them? I think that this expression is going to be the cause of some difficulty if the matter ever gets into the courts, and it will certainly be the cause of a great deal of discussion and dispute outside of the courts in the Boards of Health and in the Boards of Examiners.

There is one thing which I would suggest at this time, and that is not a legal suggestion, but a suggestion which perhaps comes from a common sense view of the subject. If it shall be determined that the words "practical plumber," so far as they apply to the qualifications of the inspectors of plumbing to be appointed under this statute—if it shall be decided that the definition shall exclude persons who have not served an apprenticeship and who have not actually engaged with their hands in the business and profession of plumbing—then it seems to me that the statute is most unfortunate. I do not know for what purpose these words were put into the statute at all. There is, however, a prevailing impression that they were inserted in the interest of plumbers so as to give them controlling voice in regard to plumbing requirements and regulations. Now, I think every one will agree that the person best qualified to inspect plumbing is not necessarily, indeed, not generally, a man who is a practical plumber, in the ordinary sense. The best inspector of plumbing is a man who is acquainted with all branches of the profession, more perhaps than any journeyman or master workman is acquainted. He is a man who knows the best methods of sanitary engineering, and he need know only enough of "practical plumbing" to be able to determine whether a job is properly done or not.

Now, if the words "practical plumber" will bear an interpretation which will permit the appointment of a man as inspector of plumbing who has the qualifications mentioned, but who is not necessarily a plumber, the statute is all right; but I am afraid, gentlemen, that they will not bear that interpretation. It seems to me that the words "practical plumber" were used for a purpose, and that purpose was to exclude men who had not actually engaged with their hands in the business of plumbing; and if such is the case it is unfortunate that it is so. We need men of intelligence, men of wide capacity, to inspect the

plumbing in our cities and towns. We do not want a man appointed who merely knows how to do a little soldering and how to wipe a joint. We want men of ability and intelligence and with a complete knowledge of sanitary engineering.

Now, recurring to the purely legal difficulties in the statute, one question is, who is to decide upon the qualifications of an inspector of plumbing? Who is to say whether he is a practical plumber? He is to be appointed by the Board of Health and I think, therefore, that the Board of Health cannot escape the responsibility of deciding whether he is a proper person or not to occupy the office. But I have not studied this question deeply enough to know what is going to happen if the Board of Health makes a wrong decision. Suppose a man is appointed who clearly is not a practical plumber, what is going to happen? Suppose the City Treasurer refuses to pay him. Suppose one should try to compel the Board of Health to make a proper appointment. Suppose somebody brings one of those extraordinary proceedings known to lawyers [laughter] to oust him from his office. Would such a proceeding prevail, if the man was not qualified? These are some of the difficulties in the interpretation and enforcement of this statute.

The SECRETARY. You know the inspector of plumbing is appointed under the civil service law.

Mr. SMITH. I am aware of that, and I am aware that he must pass a civil service examination. Whether the civil service examiners are expected to pass finally upon the question whether a candidate is a "practical plumber" or not, I do not know. They have the right clearly to refuse to examine any person who is not a practical plumber according to their definition of the term, whatever that definition may be; but suppose they certify a man to the Board of Health as eligible who turns out not to be eligible, has the Board of Health any right to appoint that man? My opinion is that it has not, because the statute would seem to indicate that the responsibility rests finally with the Board of Health.

The effect of the statute upon small towns seems to have been little considered by the Legislature. There are small towns which have a thousand inhabitants or less which have systems of water works, and

the statute therefore obliges them to have a Board of Examiners and an inspector. I know of one such town, and there is not in that town one solitary plumber, not one.

Now, what are they going to do? Must they appoint an inspector? Must they have a Board of Examiners? It is not likely that they ever will notice the statute at all, so that so much of the law will probable be wholly nugatory.

The failure to provide a competent central authority, so that there may be some uniformity in the standards of excellence required by the different cities and towns in examinations of plumbers preliminary to granting licenses, as has been suggested by Mr. McCartney, is certainly a deplorable omission in this statute. Here, there and everywhere there will be different ideas as to who are proper persons to be licensed as plumbers, and there is no provision for a uniform standard, as there ought to be. Indeed, it seems to me that in its present state the statute affords very little protection to the public if a man can get a license here and then go elsewhere and practice plumbing on the strength of that license, although his qualifications may not come up at all to the standard that is there required.

These and other considerations lead me to think that the statute should be thoroughly overhauled. I have talked with Mr. Sherwin, the chief of the Civil Service Examiners, and I find that he is dissatisfied with the law as it stands, and I would suggest that this whole subject should be investigated by the Boards of Health, and that a proper amendment of some kind should be submitted to the next Legislature.

Dr. WOODWARD. Mr. President: Just one word as to the practical application of the law. We have run across all the difficulties that have been mentioned this afternoon. Our leading plumbers are not all practical men, some of them having never served their time at plumbing. When the question of practical plumbing came up I consulted some of these men and they said that according to their ideas they were not eligible to the position of third member of the commission. We talked it over and we came to the conclusion that if anybody was a practical plumber a man who had been certified to by the Civil Service Board was, and so we appointed our chief plumber inspector as the third member of the commission. I do not know whether

that was the intent of the law, but that is what we have done in Worcester, and our commission now consists of the chairman of the Board of Health, the inspector of plumbing and the inspector of buildings.

Mr. McCARTNEY. Mr. President: I may throw a little light on this question, being conversant with the preliminary stages of the law, as I was, as showing the intent of the law, and the difficulties which were encountered in completing the law. Mr. Desper, of Worcester, was the originator of it. He submitted it to many plumbers in Worcester, and he consulted me individually in regard to it. I encouraged him all that I possibly could in securing such a law that would be of such immense advantage to the Boards of Health and to the public. The people at large would certainly gain more or less by it, and he introduced this law through a person whom a great many of you present know very well, Mr. Roe, of Worcester, a representative from his part of the Worcester district in the State Legislature, and a man who had difficulties to encounter in his own house regarding unsanitary conditions. His child died of diphtheria, and the house was examined by an inspector of our Board and found to be in an unsanitary condition. At the time he was loath to accept it as the cause of the death of his child, but eventually he felt convinced—he is an ex-principal of our High School there, and a broad-minded man—and is thoroughly convinced of the fact that the child must have died from the effects of the unsanitary conditions. Mr. Desper went to him and asked him if he thought a law of that kind would be advisable, and he said, “Yes, by all means. I consider that is the first thing the State should do to protect their cities, to have men who can come in and say whether a thing is suitable, proper and safe. When I had this plumbing done I was not competent to judge of its merits, therefore I trusted to some plumber that came along,” and he said, “If this was the condition of things we meet, by all means let us have a head, and let some suitable, qualified person see that the work is done properly, and see that the work is carried out properly,” so with that feeling he went into the Legislature and worked for this law, and Mr. Roe thought that the Boards of Health throughout the State should have full charge. Gentlemen, I am telling you the very words, knowing the feeling of the men who introduced this law, that if the Boards

of Health were authorized, this law could be carried out and enforced wisely and consistently. Much good has resulted throughout the country by our Boards of Health. There is a great deal to be proud of, and we ought to be proud of them for the work they have done in promoting sanitary laws for the benefit of the people and reducing these preventable diseases that hover around the cities and towns. He went into the State Legislature and advocated that very strongly. This Boston contingent, Mr. Damrell and others, were not perfectly satisfied with the letter of the law, for the reason that they thought it would exclude the inspector of buildings in Boston who has charge of plumbing regulations there, and that his head might be cut off. That is the impression that was given by those men who proposed this law, that they did not want to be affected by it, which would take it out of the hands of building men in Boston.

QUESTION. Was Mr. Damrell connected with that measure?

Mr. McCARTNEY. Yes, I think that to a certain extent he helped put it through as it is.

QUESTION. Is the Inspector of Buildings of Boston, Mr. Damrell, connected with the plumbing department of Boston?

Mr. McCARTNEY. He has charge of the plumbing inspection there, yes, sir.

QUESTION. I would like to ask you a question. Suppose, for instance, a young man went into the plumbing business and served his three or four years at plumbing, and was a good workman, a man who was capable of doing any kind of work that was required to be done in any first-class house in the city of Boston, Worcester, Cambridge, or any large city, able to do the finest work that was required of him to do, and he was not able to give a satisfactory explanation in regard to ventilation and matters of sanitary interest, would you as one of the Board of Examiners say that young man was disqualified for a permit to engage in plumbing, if he was fit to go throughout the State and get a position as a plumber?

Mr. McCARTNEY. I would answer that question, Mr. President, in this way. I consider that no man is a safe man or is entitled to permission to practise his trade throughout this State who does not understand the principles upon which he works. If a man does not under-

stand the principles of ventilation, I say he is not a fit man to practice the trade in your house or my house or any man's house. There are certain principles involved that he must know, and no man who has those qualifications will be prevented from conducting the business.

QUESTION. How many will you find throughout the State of Massachusetts who are capable of doing it?

Mr. McCARTNEY. Then it is time that they learned. This law was enacted to make them learn. (Applause.)

(The Secretary then moved that on account of the lateness of the hour the discussion be postponed until the next meeting, and it was so voted. Mr. Smith then moved that the chair appoint a committee of three to take into consideration the legal aspect of this question and to report at the next meeting such recommendations as they see fit to make. The motion was adopted, and the chairman appointed as that committee Messrs. Smith, McCartney and Quinn. The meeting then adjourned.)

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OF THE

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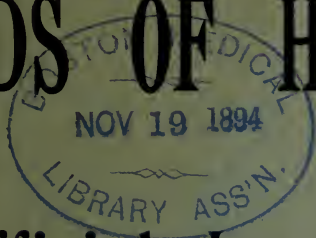
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Official Journal

OCTOBER, 1893.

SUBJECTS:

- 1st. The Authority to Close Schools during
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VOL. III.

OCTOBER, 1893.

No. 4.

QUARTERLY MEETING.

MOUNTAIN HOUSE, PRINCETON, Mass., {
October 4, 1893. }

THE meeting was called to order at about 4:30 P. M. by Dr. H. P. Walcott, the President, who called upon the Secretary to read the record of the last meeting. The record was read and approved. The name of Dr. Frank C. Walker, of the Taunton Board of Health, was then presented for membership, and he was duly elected a member of the Association.

THE CHAIRMAN. Is there any incidental business to come before the meeting at this time? If not, the next business in order is the report of a committee upon closing schools in seasons of epidemics.

DR. SAWYER, of Gardner. Mr. President and Gentlemen: I do not know that it is necessary to offer any apologies for the accommodations that we have had to-day. You will understand that the house was closed a week ago, and it was only by making special arrangements that we were enabled to come here at this time. The proprietor has done the best he could with his table and the other accommodations that we have had under the circumstances, not having any help, and the house being practically closed for the season. I feel very sorry that we have been so unfortunate in having such a cloudy, gloomy day, as quite a good many of those who came wanted the privilege of going up the mountain. I know that you all would have enjoyed the ride here and a trip up the mountain with the beautiful prospect to be had from the top, which would not have been soon forgotten, but we are unfortunate in the day. The only thing that we can do is to blame the

present administration, I suppose, as that is to blame for all the unfortunate conditions that are surrounding the country at the present time. I see some of the Democratic members do not quite agree with me.

The committee that were appointed at the last meeting to investigate this matter of closing the schools during epidemics of contagious diseases have attended to that duty, but I think that they are not ready to offer any suggestion or any plan which can be universally carried out. The more the matter is studied and discussed the more difficult it seems to arrive at any one plan that will commend itself for the use of cities and towns. In the cities where the scholars congregate in streets and in alleys and courts and are brought into intimate association with one another, as was said at the former meeting, where "they bite each other's apples and chew each other's gum," perhaps it would be safer for them if they were in the school-room. At the same time in the country where, upon being dismissed from school they separate to their homes, they are necessarily apart from each other a great deal, and under such circumstances as that it might be just as well perhaps to close the school, and thus prevent the contagion from spreading. There are arguments, of course, on both sides. It was generally discussed, and very interestingly so, at our former meeting. I am not going to take up very much time myself in discussing the matter, because Dr. Tobey has gone into it very thoroughly and has spent considerable time and pains, and can lay the facts before you. The statistics, as far as figures go, would seem to throw the evidence all one way, that it does not matter about the closing of school, that it is not necessary to do so, but at the same time there are occasions when you cannot depend altogether upon the figures. I was very much surprised when I found out what result Dr. Tobey had derived from his figures, as I think you will be when you find the per cent. of scholars that contract epidemic diseases in school compared with those who contract them out of school. It seems to me quite a remarkable fact brought out by the figures, at the same time I think there is a public sentiment which governs that matter a great deal. Just as soon as an epidemic in infectious disease breaks out in a school, you know that parents begin to take their children out; they dislike to send them, and they take them out consequently every day or two, and it really becomes a neces-

sity for the Board of Health to close that school; and, as was remarked at our former meeting, when they begin to take them out like that they begin to take them out of the Sabbath-schools, and naturally if the scholars in the Sabbath-school begin to decrease to such a degree that it is not profitable to carry on the Sabbath-school, that has to be closed. One is very apt to follow the other.

I am simply arguing on this side of the question to perhaps bring out some facts in that direction in a different way from those that will be brought out by Dr. Tobey, because his arguments are very strong as regards not closing the schools.

DR. GEORGE L. TOBEY, of Lancaster. Mr. Chairman and Gentlemen: I have little to say outside of the figures shown on the charts. Through the kindness of the Secretary of the Board of Health of Clinton I have been enabled to examine the records of the Board, and the figures which are exhibited in the tables which I have placed on the wall are copies from the record of the Board from April, 1885, to December, 1892, covering practically eight years. I have taken diphtheria, scarlet fever and the measles. In the first column is the whole number of cases of diphtheria occurring in each month of the year in children of school age, i. e., from five to eighteen years. In 1885 there were five cases of diphtheria, fifteen cases of scarlet fever, and seventeen of measles. In 1886 there were five cases of diphtheria, 118 of scarlet fever and three of measles. In 1883 there was one case of diphtheria, 85 cases of scarlet fever, 38 of which were among children of school age, and eight cases of measles, four of which were among children of school age. In 1886 there were 118 cases of scarlet fever, 46 of which were among school children. In 1888 the number was much smaller. In 1889 the number was also small, but in 1890 you will notice there were 170 cases of scarlet fever, 76 of which were among children of school age; diphtheria 13 cases, eight of which were among children of school age. In 1891 there were 147 cases of scarlet fever, 59 of which were among school children. The chart at the right is a summary of the whole. Here in the first column is the number of cases in children of school age, in the column next to the last is the census of the school children in the town for each year, and the last column indicates the per cent. of school children affected by contagious diseases. The

largest per cent. comes in 1890, which is 4.2 per cent. In the whole eight years there have been 37 cases of diphtheria, 18 of which were among school children, or about 50 per cent. Six hundred and one cases of scarlet fever, 248 of which were among children of school age; 185 cases of measles, 85 of which were among children of school age, which makes a total of 823 cases in the eight years. The number of cases of contagious diseases among children of school age have been 351, and the whole number of pupils of school age in that time have been 14,799, making the per cent. of contagious diseases among children of school age 2.3 per cent. On the charts are included July and August, which are not school months. The average attendance upon school has been 90 per cent. or 13,319 pupils, by taking out the 36 cases which occurred in July and August when there were no schools it would make 212 cases, which brings the per cent. down to about 1.6 per cent. In 1890 there were the largest number of cases. In October, November and December there were 118 cases, only 48 of which occurred among children of school age. The whole number of cases has been 823. The whole number of cases in children of school age is 351, or 42 per cent. of the whole, so that taking the actual number of cases that occurred in the school year and the 90 per cent. of attendance brings it down to 1.6 per cent., which is certainly very much smaller than I had expected.

If in the town of Clinton with 12,000 inhabitants it has been shown by the records of the Board of Health that but 1.6 per cent. of attendance or 2.3 per cent. of the whole number of children of school age has been affected by contagious diseases—and if Clinton can be taken as a fair sample of other towns—it does not seem advisable to recommend the closing of schools in times of epidemic diseases, *unless at any time* it can be shown that in a certain school or a certain district a considerable per cent. of such school or district has become affected then, of course, there would be no question as to the advisability of closing such school or schools. The following is a summary of the table which Dr. Tobey exhibited:

	School Age.	Scarlet Fever.	School Age.	Measles.	Census.	Per Cent.	
1885	(1)	15	(4)	17	1,750	.5	
1886	(1)	118	(46)	3	1,774	2.7	
1887	(3)	85	(38)	8	1,729	2.4	
1888	(3)	22	(7)	106	1,808	3.5	
1889	(8)	18	(8)	6	1,830	.8	
1890	(2)	170	(76)	1	1,960	4.2	
1891	3	147	(59)	37	1,971	.4	
1892	—	26	(10)	7	1,977	.6	
	(18)	601	(248)	185	14,799	Av. 2.3	

DR. SAWYER. Mr. Chairman: To argue for a moment on the other side, I would like to bring up the epidemic of the Dix Street School in Worcester. About that particular epidemic a paper was presented to us, so that you are all more or less familiar with it. It seems to me that it would have been good judgment and that it would have materially decreased the number of cases of diphtheria if that school could have been closed long before it was. I do not know what Dr. Woodward will say about that, but it seems to me there is an instance, and a striking instance, where the good effect of closing the school would have been immediately seen.

THE CHAIRMAN. Gentlemen: The committee have placed this subject before you, and in connection with the discussion at the previous meeting of this Association, I think all the bearings of it, so far as they can be presented by the committee, must be very distinctly before you. It is a matter of the greatest possible consequence to every Board of Health in this State, and I hope it will be discussed by those interested in the question.

MR. R. L. NEWCOMB, of Salem. Mr. Chairman: I have been interested for the last six years in the sanitary work of the city of Salem. Within that time I have noticed fewer cases of scarlet fever and diphtheria were reported in vacation time, and figures can be shown to that effect.

DR. TOBEY. I would like to ask if those cases which were reported were among school children?

Mr. NEWCOMB. Seventy-five per cent., sir.

Dr. SAWYER. I would like to have the President call on Dr. Rice, of Fitchburg.

The CHAIRMAN. Dr. Rice, we should be very glad indeed to hear from you.

Dr. CHARLES H. RICE, of Fitchburg. I have not much to say, Mr. Chairman, but in reply to the gentleman from Salem, every one knows that contagious diseases are not as numerous and do not run as much of a course in warm weather, when we have vacation generally for school children, as in other seasons of the year. Most of the schools are closed during July and August, when we hardly ever have many cases of contagious disease. That may answer his argument perhaps. I believe that schools should not be closed on account of contagious diseases unless the school house itself is at fault, as it was in Worcester, as I have understood. That would make another matter, I think, as the gentleman from Salem said they had more cases reported during the school months than any other time. I should say that it was the season of the year and not the closing of the schools that reduces the number of cases of contagious disease.

Mr. NEWCOMB. I do not understand that to be an inviolable condition, because I have understood in the spring and fall we have more diseases reported than during July and August, fewer of them perhaps on account of the closing of the schools, though those are not the only months when the schools are closed. It is only a part of July and the whole of August that the schools are closed there. We have vacations at other times in the year, but outside of that the fact yet remains that in the spring we get more of diphtheria, as we also do of typhoid in the fall; but that is neither here nor there. In the spring months, we get more scarlet fever and diphtheria than any other time in the year, and at that time the schools are in session except for a week in April. I would like to say also, Mr. Chairman, that I am not arguing this matter at all. I simply mention facts as they occurred to me.

Dr. WOODWARD. Those of us who were present at the meeting held in Newton some two years ago will remember a paper presented by Dr. McCollom where he showed that throughout the whole State of Massachusetts scarlet fever and diphtheria increased steadily up until the

summer vacation and then practically stopped until the schools came in again in the fall.

The Dix Street School in Worcester has been spoken of. That school house had faulty ventilation. It was one of the healthiest schools in the city until diphtheria was introduced. The school was apparently healthy, but diphtheria having been once introduced it spread like wild fire among the children until we had forty cases. Then as soon as we found that we had a considerable number of cases we closed the school, and stopped the attendance. The school showed no considerable sickness until the disease was introduced. I admit the ventilation was very faulty from the start.

The CHAIRMAN. Is there any thing else to be said upon this subject?

Dr. F. A. FOSTER. Mr. Chairman: It has been brought to my attention to-day by a gentleman from Waltham that his daughter has just been sick with diphtheria, something we have not had in Waltham for some two or three months, I think. He suggested that he could not give any cause for it, and our agent has not been able to. He thought that possibly there might be something connected with the school whereby she had taken the disease, but as no other case has been reported, and this was something like two weeks ago that she was first taken, we can find no cause for it, but he suggested this thing to-day, and I thought perhaps it would not be out of the way to speak of it here. I believe in our schools the teachers are requested to take all pencils and put them in their desks and in the morning distribute them amongst the children. The child of Mr. Jones to-day has the pencil of the child of Mr. Smith yesterday, and so it goes on that way. Would it not be for the interest of all school children for the Board to go to the Superintendent of Schools or by an act of the Board (if possible) compel her to let the pencil remain upon the desk of the child until it is used up and not have it transferred from one child to another? Because the child who has one pencil to-day has some other child's pencil to-morrow, and in that way we might lessen the tendency to spread of contagious diseases. I simply make that point as one gentleman spoke in regard to chewing gum, etc.

The SECRETARY. The usual custom is to have one cup for the whole school to drink from.

Dr. F. A. FOSTER. Exactly.

The CHAIRMAN. If there is nothing more to be said upon this subject, gentlemen, we will proceed to the next paper, which is a discussion of the new law relating to plumbing, to be opened by Inspector John F. McCartney, of Worcester.

Mr. JOHN F. MCCARTNEY, of Worcester. Mr. President and Gentlemen of the Massachusetts Boards of Health: In opening the discussion of the new State law passed by the last Legislature, I think it will be well if I should read to you in full the law as it was passed, that we may the more freely and intelligently discuss the merits and demerits of it, and its reasonable or proper interpretation and application, so if you have no objection I will proceed to read the law.

(Mr. McCartney then read the act relative to licensing plumbers, chapter 477, approved June 10th, 1893.)

I do not know really, gentlemen, why I was selected to open this very important discussion, because I think it is of momentous import to the Boards of Health throughout the State, but I suppose the committee thought they would select a target, and that I would perform the part of a target, and therefore will be as brief as possible in giving my interpretation individually of the new State law which has recently been passed.

I understand the law to mean that hereafter all plumbers or men desiring to engage in the business of plumbing, either as master or employing plumber or as a journeyman plumber, shall receive a license therefor before conducting such business. In the first place, the law specifies that there shall be a Board of Examiners to examine all applicants for conducting such business within the Commonwealth, who desire to engage in that business after September 10th, three months after its passage, and that Board shall comprise the Chairman of the Board of Health, the Inspector of Buildings, if there is an Inspector of Buildings, who shall be *ex officio* member of that Board, and a third member who shall be appointed by the Board of Health, and also be a practical plumber. If there is no Inspector of Buildings in a city or town of 5,000 inhabitants or more throughout the State, then a second mem-

ber shall be appointed by the Board of Health who shall also be a practical plumber, and whose compensation will be equal to the third member. That being the fact, it strikes me that the law is intended, in the first place, to place all the responsibility upon the Boards of Health where they could possible do it. The City of Boston is exempt from one particular section, that is the section relating to the filing of plans and the issuance of a permit for those they claim they have there already, and do not desire to be molested, or do not desire to be obliged to change the present rules and regulations which they have. In the City of Boston the Inspector of Buildings has charge of the plumbing regulations. I do not know that in any other city of the State the Inspector of Buildings has charge of the plumbing regulations, therefore I believe this law affects every city or town of 5,000 or more inhabitants in every particular except Boston, and that is exempt from that particular section relating to the filing of plans, the issuance of permits, etc. This Board which the State law provides for has to examine all applications which may be submitted to them from the Board of Health. In other words, a man desiring to apply for a license to conduct his business either as a journeyman, master or employing plumber must first apply to the Board of Health; that application is referred to this Board of Examiners, and they examine him as to his qualifications for conducting such business. If he is qualified properly, they so certify to that Board of Health, and the Board of Health then shall issue a license to him to engage in the business in any city or town of 5,000 inhabitants or more. That license is taken with him and will hold good in any city or town of the State wherever he may go. It may be that he moves from the vicinity or locality where the license was originally issued. He can have it renewed by any other authority in any other city, and so it has force throughout the State. He goes into another locality, and he simply submits his license and it is renewed by that department. That being the fact, it leaves, in my estimation, the standard of examination somewhat incomplete. That is to say, a man might apply for a license in Worcester and might not be qualified in the city of Boston or in the city of Cambridge. It is trusting everything entirely to this local Board of Examiners, and yet the Board say

their license shall have force throughout the State. He can engage in business anywhere in the State of Massachusetts in any city or town of 5,000 inhabitants or more. I contend that there will be some difficulty in enforcing that particular point for the reason, as I said before, if a man is not qualified in the city of Worcester, he may go to the city of Cambridge and be qualified, and that being the case, he can then go right back to Worcester and engage in his business. There seems to be a little injustice, or unfairness, or a little inconsistency about it.

Right here I would say that the wisest means out of that difficulty would be to have a supervising head either appointed by the Massachusetts State Board of Health or by some other authority which would make a standard of examination that could be applied in every city and town of this State. I think it is a wise suggestion that I make this afternoon. It does not particularly affect the law only in that sense, that a man might come into the city of Worcester and apply for a license, and he might be disqualified. His examination might not be satisfactory to the examiners in that locality on account of his character, or anything else concerning him, and still he might go down to Clinton and pass a very satisfactory examination. Then he could come back into the city of Worcester and engage in business. There may be some objections, and I think there are objections raised already.

QUESTION. One moment. In making this examination how do they propose to make it, by something similar to a civil service examination, writing it all down on paper? I know several good plumbers, fine workmen, but if you ask them to sit down to a written examination they could not do it. We have men in Worcester, Clinton and in other places, who, if they were required to take that examination, would be disqualified, because they could not write them, but they are practical workmen, practical plumbers, good plumbers, who make just as good a job as any men in the State, but still they are no arithmeticians, no writers or anything like that. I for one would like to know how those examinations are going to affect those men who are practical plumbers as you call them, and go from one town to another? If a man comes from Cambridge to-day and goes to Fitchburg, and is not able to take an examination, he is disqualified according to that.

MR. MCCARTNEY. That is what the law says, and therefore I made that suggestion, at least, that there should be a concentration of the heads of these Examining Boards, if necessary, to decide upon a form of examination that they would consider sufficient to qualify a man.

DR. LYNCH. Now, we have elected in Waltham one of our practical plumbers upon the commission.

THE CHAIRMAN. I would like to suggest to the gentleman from Waltham whether it would not be better to have Mr. McCartney finish his statement?

MR. MCCARTNEY. I was about referring to an objection that has been raised, and somewhat wisely, in regard to the towns. You will all understand, gentlemen, although a great many I talk with do not so understand it, that according to the law every city and town of 5,000 inhabitants or more, and every town which may have a system of water supply or sewerage, must have these rules and regulations. It^a meant to go further than simply to say that all cities and towns of 5,000 inhabitants. It also meant that if there should be a system of water supply or sewerage in a smaller town, this law would affect it. There is some objection raised on that point in regard to the wisdom of enforcing a law of that kind in those small places. Some may think it is too far reaching. They think that meant to give employment to an inspector of plumbing, for instance, who must be a practical plumber, with a salary, and not to be removed except for cause shown. They do not think they have work enough to employ them, and consequently they feel it is a little too far reaching, and there have been some objections raised to it.

I should say this much in regard to that, if that were the means of killing the law, as it were, if it really means killing the law, I would advise, if any change of the law was made, and those small towns be exempted, and "cities" inserted instead of "all cities and towns in said Commonwealth;" but my personal feeling in the matter is this, that I see no reason why the towns in Massachusetts should not be entitled to the benefits derived from a law which is intended to promote sanitary improvements, which will strengthen wonderfully the Boards of Health in reducing these preventable diseases. I see no reason why

it should not, if there is any good result to be obtained from it affecting the health of a town, because I consider a life in a town to be as dear to them as is the life of a person living in a city, and I do not consider that it ought to be a question of means, a thousand or twelve hundred dollars which it would necessitate in order to employ a man demanded by the State law. I do not think that would pay for a single life if such can be saved, and I think the gentlemen will all agree with me when I say that in country towns there is a vast field for improvement. It is establishing, as it were, in every town and city in this Commonwealth a school for the education and enlightenment of the people in sanitary matters in general as well as in sanitary plumbing. It would be a splendid thing, and I hope that the law as it is, as far as that is concerned, will apply, and I hope the people living in those localities will look at it in the same manner which I do. I do not know that they will, but I know it will result in great good to the State and to the Boards of Health, because, as I say, there are reasons why I think it ought to. If all the cities in this State are affected by this law and their plumbers are obliged to pass examinations, the people are enlightened in matters pertaining to the plumbing trade and in sanitary matters in general, till, as it were, all the booby men and the simplest men in that little town can operate their trade as they please.

Again, in those places suppose we have not master plumbers enough to be affected by a law of this kind, it will oblige us to appoint a plumbing inspector. Why? The reason in my mind, gentlemen, is this, and I have had some experience in the country towns of Massachusetts as well as in other places. Corporations and manufacturing establishments which have plumbing work to be done desire to have it done properly and practically, and they go into the cities for their work where they feel somebody is responsible and who will do for them a reliable job, thus taking from those towns the means that ought to be distributed in the towns in which they are located. I think with a law of this kind enforced in little towns at an expense even of ten or twelve hundred dollars a year, you will have good plumbing shops, and you will give those people reason to think they can have their work done thoroughly and satisfactorily in their own locality.

There are questions raised also in regard to the application of the law in cities where there is a building inspector. Now, gentlemen, I know that the law meant this, that the inspector of plumbing should be under the supervision of the Boards of Health in every city and town in this Commonwealth except in Boston. I know the law means just that. It is qualified in some sense, and it does not mean that where there are inspectors of buildings they shall have charge of the rules and regulations. It does not mean anything of the kind. It means in substance that the Board of Health shall have full control of the plumbing rules and regulations. They shall appoint an inspector, and they shall refer the revocation of a license to the Examining Board, but everything is practically in the control of the Board of Health, where it should be. That is my interpretation of the law, and I think you will all agree with me when you have read it thoroughly yourselves. I am simply an individual and give you my personal interpretation of it. I think it is a very good one, a first-class one in every particular except one, and I think that is this, in order to avoid the difference between the cities and towns in regard to the form of examination that would apply in the city of Worcester, in the town of Westboro or Clinton or in the city of Cambridge. I think it would develop a great deal of good, and it would certainly make this law a practical law, because it must be enforced if it is going to amount to anything.

I think I have already taken up too much time of the meeting, but I will give way now and answer any questions which may be asked by any members present. I do not consider I am capable of expressing an opinion as a lawyer upon the substance of this law, but I will give you the benefit of my experience in answering any questions which you may put.

Dr. SAWYER. I would like to ask you one question, and that is, the law provides that there shall be an Examination Board; it also provides that there shall be an inspector of plumbing. Is it necessary for that inspector or plumber to pass an examination? Can he be selected from any body?

Mr. McCARTNEY. No, sir, I think not, doctor. He must be selected according to the State law, and be examined as to his qualifications.

Dr. SAWYER. Who is going to examine him?

Mr. McCARTNEY. The State Civil Service Examiners.

Dr. SAWYER. That does not apply in towns of less than 5,000 inhabitants. What are you going to do in that case?

Mr. McCARTNEY. In a case of that kind it is discretionary. I should imagine you had the privilege under this law to appoint your own inspector and qualify him, if you will, but he must be a practical man. That is the requirement of the new law—a practical plumber.

Dr. LYNCH. What is a practical plumber?

Mr. McCARTNEY. I should consider a practical plumber to be a man who practiced the trade of plumbing, who worked at it as a journeyman.

Dr. LYNCH. I have looked in the dictionary and I cannot find anything more than, "A man that works on lead." [Laughter.]

Mr. McCARTNEY. That is the literal meaning of the word. We have to take a word with reference to general use, and that is the way the word is used; of course, when the law was prepared these words were intended to mean certain things.

Dr. LYNCH. I suppose it meant that a man who had served his time at the plumbing business and was capable of doing any kind of work, but I have looked the unabridged dictionary over time and time again, and all I can find is, "A man that works on lead." I thought probably you might know a little more than that. [Renewed laughter.]

Mr. McCARTNEY. I do not. I do not claim to know any more than the dictionary by any means. I would say in answer to the questions by the gentleman just seated that every law is founded upon common sense, and I do not believe that the people who promulgated this law intended anything as "a practical plumber" except a man who is conversant with the practical points of plumbing in all its forms, a man who has practiced that trade, who has done work at the trade. He may either be a journeyman or he may be an apprentice in the business. If he has practiced the plumbing business and is conversant with the principles of plumbing relating to sanitary drainage, ventilation and adjustment of suitable water pipes in the house and the necessary plumbing arrangements therefor, I believe that under the law he is eligible as the third man on the Board, I do not care how many years he has been in the business. I do not want to say anything that

may be misunderstood in regard to this answer. I do not believe that any man thirty or forty years in the business can go into a house and do a job of plumbing unless he has practiced it; simply because he is conversant with the way in which men under him do it I do not consider is any reason why that man can work in a building and ply his craft. Therefore under the law I do not consider that a man who is an employing plumber and has never practiced the practical points of the business as a journeyman, no matter how many years that man has been in the business, is eligible under the statute law.

Mr. LYNCH. Another question. Supposing Mr. Smith or Mr. Brown goes to Worcester and desires to get a permit to do plumbing work as a practical plumber. He has a license from another place. Mr. McCartney is on the Board of Examiners. He examines that man as to his qualifications both as to the mechanical principles underlying sanitary drainage and as to his ability to do practical work. The man passes the first part of that examination satisfactorily. Mr. McCartney then sees him at a house working. He can tell in ten minutes whether he is a practical man or not. Suppose he sees that the man can do practical work; but supposing it was found on further investigation that that man never did a day's work of plumbing as an apprentice or journeyman. You surely must give him a license because he is able to do plumbing work. Nevertheless, is he a practical plumber?

Mr. MCCARTNEY. I do not consider that he is.

Mr. LYNCH. Well, you have examined him theoretically and practically and you would give him a permit to do work; he is capable, in your opinion, of going into any house and doing any ordinary job.

Mr. MCCARTNEY. I consider in answering that question, Mr. President, that that is a hypothetical case, a case where you assume incompetency on the part of the Examining Board to examine that man. [Laughter.] Under the law a practical man upon that Board is capable of determining, in my own estimation, whether he has qualifications or not. There are certain questions, there are certain principles which that man must know in order to ply his trade, and I dare say there will be no man appointed on the Board who is not capable of determining by examination whether that man is capable of practicing his trade or not.

Mr. LYNCH. I have in mind, Mr. Chairman and gentlemen, one man who was appointed on that Board in a certain city, not twenty miles from Princeton, who was not a practical plumber, that is, he never served his apprenticeship to the craft, but he was an employing plumber, a very intelligent fellow, and he had done work at times as a helper, and was able to do what you would call wiping a joint. He was appointed on that Board of examining plumbers. Now that man is to decide whether you or I or any other man who has spent years at the business is to work at the trade. My object in raising this question is this: Is there any phrase by which the word "practical" may be defined? The question has been raised in Boston. Such men as J. M. Tucker have been applied to to define the meaning of the word "practical," men who have spent all their lives at the craft of plumbing, and have replied that they are unable to define it. In this country they do not know what a "practical" man is. Mr. Brown spends six months as an apprentice at the plumbing business; he starts up a shop, and he works with his foreman, who is a practical plumber. Do you not think, Mr. McCartney, that there is some misunderstanding, some misconception of the word "practical" or liable to be in that case?

Mr. MCCARTNEY. Yes, I think so. The question has been raised already before I came here to-day.

Dr. LYNCH. Would it not be well for the statute to define that, as you have suggested, in some way?

Mr. MCCARTNEY. My suggestion in that regard as in reference to the other point is that some concentrated authority should be had in order to properly interpret the meaning of the law, and that can only be had, in my estimation, by having an executive head, a committee appointed by the Massachusetts Board of Health. There is no doubt, of course, if they will only do their duty, as I know they will, that they will try to enforce the law wherever it can be enforced, and my idea is that the Boards of Health of the State should appoint a committee, if necessary, to properly interpret the meaning of this law and application of it, and I think all the Boards of Health throughout the State would be relieved a great deal just at this time.

The question again has been raised, let me say before I sit down, as

to who should be licensed to practice, who should be permitted to work under the new law of those who have practiced their trade until the law was passed; that is, from now on they must receive licenses and be examined, etc. It is intended that all those now working at the business up to September 10th shall be permitted to practice their trade or engage in business without being affected by this law, you understand. Now then, it becomes a question who are the men you are going to decide who will be permitted to work under the law? They must be registered as practical plumbers. How do you know whether a man has done plumbing or not under the law? As you say, he may have worked a year or six months at the business of plumbing, and if he is entitled to a license, he comes in and registers and you issue him a license or certificate, and he is exempt under the law. That I consider an unfair thing, and I think in the beginning care should be taken that proper men be selected to conduct their business, and a man who is not fit to conduct that business should be excluded, and the examination should be of such a nature as to show their qualifications for conducting the business. That is a question that has been raised already, as you know. There are lots of boys, I may say, not nineteen years old, who are in the cities and towns all over this State who have worked six months or a year at the business, and they enter a house to do plumbing, but you can all see that they are not competent to do it thoroughly. I think it is wise that that thing be understood thoroughly, and that we have only such men as are journeymen within the meaning of the law. There is where the word has to be interpreted in order that the new law may be carried out.

The CHAIRMAN. Cannot you help us in this matter, Mr. Smith?

Mr. E. I. SMITH, of Waltham. Mr. Chairman and Gentlemen: I unfortunately belong to a profession which always sees a great many difficulties, and it has the reputation of always looking for trouble. [Laughter.] It seems to me that if the legal profession desired to find a statute which suggests trouble they might well be pointed to this one. [Renewed laughter.] There are many questions involved in the interpretation of this statute upon which questions one must have a great deal of temerity to risk any opinion whatever. In the first place, as has been suggested, what is the definition of the words "practical

plumber." How can you expect a lawyer to define these words when plumbers themselves cannot define them? I think that this expression is going to be the cause of some difficulty if the matter ever gets into the courts, and it will certainly be the cause of a great deal of discussion and dispute outside of the courts in the Boards of Health and in the Boards of Examiners.

There is one thing which I would suggest at this time, and that is not a legal suggestion, but a suggestion which perhaps comes from a common sense view of the subject. If it shall be determined that the words "practical plumber," so far as they apply to the qualifications of the inspectors of plumbing to be appointed under this statute—if it shall be decided that the definition shall exclude persons who have not served an apprenticeship and who have not actually engaged with their hands in the business and profession of plumbing—then it seems to me that the statute is most unfortunate. I do not know for what purpose these words were put into the statute at all. There is, however, a prevailing impression that they were inserted in the interest of plumbers so as to give them controlling voice in regard to plumbing requirements and regulations. Now, I think every one will agree that the person best qualified to inspect plumbing is not necessarily, indeed, not generally, a man who is a practical plumber, in the ordinary sense. The best inspector of plumbing is a man who is acquainted with all branches of the profession, more perhaps than any journeyman or master workman is acquainted. He is a man who knows the best methods of sanitary engineering, and he need know only enough of "practical plumbing" to be able to determine whether a job is properly done or not.

Now, if the words "practical plumber" will bear an interpretation which will permit the appointment of a man as inspector of plumbing who has the qualifications mentioned, but who is not necessarily a plumber, the statute is all right; but I am afraid, gentlemen, that they will not bear that interpretation. It seems to me that the words "practical plumber" were used for a purpose, and that purpose was to exclude men who had not actually engaged with their hands in the business of plumbing; and if such is the case it is unfortunate that it is so. We need men of intelligence, men of wide capacity, to inspect the

plumbing in our cities and towns. We do not want a man appointed who merely knows how to do a little soldering and how to wipe a joint. We want men of ability and intelligence and with a complete knowledge of sanitary engineering.

Now, recurring to the purely legal difficulties in the statute, one question is, who is to decide upon the qualifications of an inspector of plumbing? Who is to say whether he is a practical plumber? He is to be appointed by the Board of Health and I think, therefore, that the Board of Health cannot escape the responsibility of deciding whether he is a proper person or not to occupy the office. But I have not studied this question deeply enough to know what is going to happen if the Board of Health makes a wrong decision. Suppose a man is appointed who clearly is not a practical plumber, what is going to happen? Suppose the City Treasurer refuses to pay him. Suppose one should try to compel the Board of Health to make a proper appointment. Suppose somebody brings one of those extraordinary proceedings known to lawyers [laughter] to oust him from his office. Would such a proceeding prevail, if the man was not qualified? These are some of the difficulties in the interpretation and enforcement of this statute.

The SECRETARY. You know the inspector of plumbing is appointed under the civil service law.

Mr. SMITH. I am aware of that, and I am aware that he must pass a civil service examination. Whether the civil service examiners are expected to pass finally upon the question whether a candidate is a "practical plumber" or not, I do not know. They have the right clearly to refuse to examine any person who is not a practical plumber according to their definition of the term, whatever that definition may be; but suppose they certify a man to the Board of Health as eligible who turns out not to be eligible, has the Board of Health any right to appoint that man? My opinion is that it has not, because the statute would seem to indicate that the responsibility rests finally with the Board of Health.

The effect of the statute upon small towns seems to have been little considered by the Legislature. There are small towns which have a thousand inhabitants or less which have systems of water works, and

the statute therefore obliges them to have a Board of Examiners and an inspector. I know of one such town, and there is not in that town one solitary plumber, not one.

Now, what are they going to do? Must they appoint an inspector? Must they have a Board of Examiners? It is not likely that they ever will notice the statute at all, so that so much of the law will probable be wholly nugatory.

The failure to provide a competent central authority, so that there may be some uniformity in the standards of excellence required by the different cities and towns in examinations of plumbers preliminary to granting licenses, as has been suggested by Mr. McCartney, is certainly a deplorable omission in this statute. Here, there and everywhere there will be different ideas as to who are proper persons to be licensed as plumbers, and there is no provision for a uniform standard, as there ought to be. Indeed, it seems to me that in its present state the statute affords very little protection to the public if a man can get a license here and then go elsewhere and practice plumbing on the strength of that license, although his qualifications may not come up at all to the standard that is there required.

These and other considerations lead me to think that the statute should be thoroughly overhauled. I have talked with Mr. Sherwin, the chief of the Civil Service Examiners, and I find that he is dissatisfied with the law as it stands, and I would suggest that this whole subject should be investigated by the Boards of Health, and that a proper amendment of some kind should be submitted to the next Legislature.

Dr. WOODWARD. Mr. President: Just one word as to the practical application of the law. We have run across all the difficulties that have been mentioned this afternoon. Our leading plumbers are not all practical men, some of them having never served their time at plumbing. When the question of practical plumbing came up I consulted some of these men and they said that according to their ideas they were not eligible to the position of third member of the commission. We talked it over and we came to the conclusion that if anybody was a practical plumber a man who had been certified to by the Civil Service Board was, and so we appointed our chief plumber inspector as the third member of the commission. I do not know whether

that was the intent of the law, but that is what we have done in Worcester, and our commission now consists of the chairman of the Board of Health, the inspector of plumbing and the inspector of buildings.

Mr. McCARTNEY. Mr. President: I may throw a little light on this question, being conversant with the preliminary stages of the law, as I was, as showing the intent of the law, and the difficulties which were encountered in completing the law. Mr. Desper, of Worcester, was the originator of it. He submitted it to many plumbers in Worcester, and he consulted me individually in regard to it. I encouraged him all that I possibly could in securing such a law that would be of such immense advantage to the Boards of Health and to the public. The people at large would certainly gain more or less by it, and he introduced this law through a person whom a great many of you present know very well, Mr. Roe, of Worcester, a representative from his part of the Worcester district in the State Legislature, and a man who had difficulties to encounter in his own house regarding unsanitary conditions. His child died of diphtheria, and the house was examined by an inspector of our Board and found to be in an unsanitary condition. At the time he was loath to accept it as the cause of the death of his child, but eventually he felt convinced—he is an ex-principal of our High School there, and a broad-minded man—and is thoroughly convinced of the fact that the child must have died from the effects of the unsanitary conditions. Mr. Desper went to him and asked him if he thought a law of that kind would be advisable, and he said, “Yes, by all means. I consider that is the first thing the State should do to protect their cities, to have men who can come in and say whether a thing is suitable, proper and safe. When I had this plumbing done I was not competent to judge of its merits, therefore I trusted to some plumber that came along,” and he said, “If this was the condition of things we meet, by all means let us have a head, and let some suitable, qualified person see that the work is done properly, and see that the work is carried out properly,” so with that feeling he went into the Legislature and worked for this law, and Mr. Roe thought that the Boards of Health throughout the State should have full charge. Gentlemen, I am telling you the very words, knowing the feeling of the men who introduced this law, that if the Boards

of Health were authorized, this law could be carried out and enforced wisely and consistently. Much good has resulted throughout the country by our Boards of Health. There is a great deal to be proud of, and we ought to be proud of them for the work they have done in promoting sanitary laws for the benefit of the people and reducing these preventable diseases that hover around the cities and towns. He went into the State Legislature and advocated that very strongly. This Boston contingent, Mr. Damrell and others, were not perfectly satisfied with the letter of the law, for the reason that they thought it would exclude the inspector of buildings in Boston who has charge of plumbing regulations there, and that his head might be cut off. That is the impression that was given by those men who proposed this law, that they did not want to be affected by it, which would take it out of the hands of building men in Boston.

QUESTION. Was Mr. Damrell connected with that measure?

Mr. McCARTNEY. Yes, I think that to a certain extent he helped put it through as it is.

QUESTION. Is the Inspector of Buildings of Boston, Mr. Damrell, connected with the plumbing department of Boston?

Mr. McCARTNEY. He has charge of the plumbing inspection there, yes, sir.

QUESTION. I would like to ask you a question. Suppose, for instance, a young man went into the plumbing business and served his three or four years at plumbing, and was a good workman, a man who was capable of doing any kind of work that was required to be done in any first-class house in the city of Boston, Worcester, Cambridge, or any large city, able to do the finest work that was required of him to do, and he was not able to give a satisfactory explanation in regard to ventilation and matters of sanitary interest, would you as one of the Board of Examiners say that young man was disqualified for a permit to engage in plumbing, if he was fit to go throughout the State and get a position as a plumber?

Mr. McCARTNEY. I would answer that question, Mr. President, in this way. I consider that no man is a safe man or is entitled to permission to practise his trade throughout this State who does not understand the principles upon which he works. If a man does not under-

stand the principles of ventilation, I say he is not a fit man to practice the trade in your house or my house or any man's house. There are certain principles involved that he must know, and no man who has those qualifications will be prevented from conducting the business.

QUESTION. How many will you find throughout the State of Massachusetts who are capable of doing it?

Mr. McCARTNEY. Then it is time that they learned. This law was enacted to make them learn. (Applause.)

(The Secretary then moved that on account of the lateness of the hour the discussion be postponed until the next meeting, and it was so voted. Mr. Smith then moved that the chair appoint a committee of three to take into consideration the legal aspect of this question and to report at the next meeting such recommendations as they see fit to make. The motion was adopted, and the chairman appointed as that committee Messrs. Smith, McCartney and Quinn. The meeting then adjourned.)

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LOUISVILLE, KY., Dec. 1, 1885.

MY DEAR DOCTOR :

In answer to the enquiry as to the comparative value of brandy and whiskey in therapeutics, I have briefly this to say : After a long and very careful comparison, at the bedside, of the effects of the best Cognac brandy and the best Kentucky whiskey, I am satisfied that the action of the latter is as speedy, pleasant and enduring as that of the former. There are, as you already know, many fine whiskeys manufactured in this state under different brands. Among them I may name the BELLE OF NELSON, as being thoroughly well made, honest, straight and mellow, and for these reasons being specially fitted as a remedy where alcohol is indicated.

Always faithfully yours,

D. W. YANDELL.

For the information of the trade generally we append a copy of a letter from Captain Theodore C. Tracie, who was for ten years connected with the U. S. Internal Revenue Service, and was thoroughly familiar with the methods of distillation pursued in Kentucky and elsewhere. In his capacity of U. S. Int. Rev. Agent, in charge of the Division of Kentucky and Tennessee, he made frequent examinations of distilleries, and the statement made by him is entitled to high consideration :

LOUISVILLE, KY., January 1, 1885.

Mr. Robert J. Tilford, Pres. Belle of Nelson Distillery Co.

DEAR SIR : For several years it was my duty as Internal Revenue Agent to examine the Distilleries in Kentucky, and other States. As I reported, a few years ago, after making a careful examination of the methods pursued in the distillation of the BELLE OF NELSON Whiskey, I found the article to be literally a pure hand-made Sour Mash Whiskey—every stage of the process being similar to the old-time method—no large tubs, patent rakes, yeast, or cold slop being used, fermentation being produced by natural and unaided causes. The proportion of rye and malt to corn used in the formula was about 33 per cent., which made the product very expensive, but it produced a whiskey which is all you represent it in purity, smoothness, and incomparable flavor, having no superior in the state. I can heartily endorse the high encomiums which have been passed upon this well-known whiskey for many years.

Yours truly,

THEODORE C. TRACIE,

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THE MASSACHUSETTS ASSOCIATION OF
BOARDS OF HEALTH.

Vol. IV.

JANUARY, 1894.

No. 1.

SUBJECT:

Plumbing Inspection in Massachusetts; and
the Appointment of Inspectors.

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MASSACHUSETTS ASSOCIATION OF BOARDS OF HEALTH.

Organized 1890.

[This Association as a body is not responsible for statements or opinions of any of its members.]

VOL. IV.

JANUARY, 1894.

NO. 1.

ANNUAL MEETING

OF THE

Massachusetts Association of Boards of Health.

THE annual meeting of the Massachusetts Association of Boards of Health was held at the Parker House, Boston, on the afternoon of Thursday, Jan. 25, 1894, at three o'clock, the President, H. P. Walcott, M. D., presiding.

The CHAIRMAN. Will the Association come to order, and listen to the reading of the records by the Secretary? (The records were then read by the Secretary, L. F. Woodward, M. D.) If there is no objection to the records as read, they will stand as the records of the last meeting of this Association. Has the Executive Committee any report to make?

The Secretary then presented a list of names for membership in the Association. On motion, it was voted that the Secretary cast a ballot in behalf of the Association for the election to membership of the following named gentlemen :

W. T. Clark, M. D., Worcester.
Theodore Pinkham, Brookline.
James M. Codman, Jr., Brookline.
Edw. F. Porter, Watertown.
Philip P. Connealy, Watertown.
J. L. Breshnihan, Fitchburg.

O. P. Porter, M. D., Lowell.
Geo. A. G. Stickney, Salem.
Wm. H. Gove, Salem.
Jesse Robbins, Salem.
Wm. H. Fullam, Salem.
Tucker Deland, Brookline.

The CHAIRMAN. The next business before the Association is the election of its officers for the ensuing year. Are the committee upon nominations ready to report?

Dr. Fox then submitted in behalf of the committee on nominations the following list of names for officers of the Association for the ensuing year, and it was voted that the Secretary cast a ballot for these names in behalf of the Association, which was done, and the officers for the following year were declared to be the following:

FOR ONE YEAR.

Dr. H. P. WALCOTT, *Pres.*
S. H. DURGIN, M. D.
S. W. ABBOTT, M. D.
L. F. WOODWARD, M. D., *Sec.*
J. B. FIELD, M. D., *Treas.*

FOR TWO YEARS.

C. H. MORROW, Gloucester.
EDWIN FARNHAM, M. D.,
Cambridge.
G. L. TOBEY, M. D., Lancaster.
N. HATHAWAY, *Chairman*,
New Bedford.
G. H. BABBITT, Boston.

Prof. W. T. SEDGWICK, *Auditor*.

The Treasurer's report was then read, as follows:

ANNUAL REPORT OF THE TREASURER OF THE MASSACHUSETTS ASSOCIATION OF BOARDS OF HEALTH.

1893.

RECEIPTS.

Balance from 1892.	\$156.27
Annual Assessments	276.00
	<hr/>
	\$432.27

EXPENDITURES.

Stenographic Reports of Meetings	\$65.50
Postage	18.85
Printing.	17.55
Dinners for Invited Guests	3.00
	<hr/>
Balance to 1894.	\$104.90
	327.37
	<hr/>
	\$432.27

Respectfully submitted.

JAMES B. FIELD, *Treasurer*.

Examined and approved as correctly cast and properly vouched for.

WM. T. SEDGWICK, *Auditor*.

THE CHAIRMAN. If there be no objection, the report of your Treasurer will be received and placed on file. Are there any committees to report? I believe, Judge Smith, that you are chairman of the committee which was to report at this meeting.

HON. E. IRVING SMITH. I believe, Mr. Chairman, that we were appointed a committee to report recommendations in reference to the Statute passed last year relative to the plumbing law, and the committee herewith submits its report. This report takes up the Act section by section, and makes certain observations. I suppose that the members of the Association are familiar with the terms of the Act. At all events, if they have wrestled with it as much as the Waltham Board of Health has, I think every word of it will be graven on their memory.

TO THE MASSACHUSETTS ASSOCIATION OF BOARDS OF HEALTH:

Gentlemen:—Your committee was appointed at the last meeting of the Association to consider the Statute in reference to plumbing recently passed by the Legislature, being Chapter 477 of the Acts of 1893, and to make such recommendations in regard to proposed changes in the Statute as might seem advisable. Your committee has, therefore, considered the Act in question and endeavored to arrive at some conclusions in reference to it.

Section 1 of the Act provides for licensing plumbers who may engage in the business of plumbing after the passage of the Act. No provision is made with reference to registration or licensing of plumbers who were engaged in the business at that time. As a practical matter, plumbers frequently find it inconvenient, when they undertake to do work in localities where they are not known, to prove whether they were in business at the time the Act was passed. If they were, they need no license; but if they were not they must produce a license from some city or town in this Commonwealth. As a matter of convenience to plumbers, it would be well, perhaps, if the Act could provide for the licensing or registration of plumbers who were engaged in business at the time of the passage of the Act but who are not now within its terms. There may be some doubt, which your committee has not had time to investigate and settle, whether such a provision, absolutely requiring the registration of all plumbers, whether engaged in business at the time of the passage of the Act or not, would be constitutional; but at all events such provision might be made permissive,—that is, the plumbers might be allowed to register with the Boards of Health and obtain a certificate to the effect that they were engaged in the business of plumbing at the time of the passage of the Act. They would then be provided with a ready means of proof of their qualifications to do business.

Your committee have no recommendations to offer with regard to changes in Section 2 of the Act. That Section provides for applications to the Board

of Health by persons desiring to engage in the business of plumbing, and for examination of such persons by the Board of Examiners mentioned in other parts of the Act.

In Section 3 your committee feel that there should be, at least, one important change. The Act fails to provide any central authority whatever which may have control over the various Boards of Examiners in the different cities and towns of the Commonwealth. As the Act now stands a person desiring to engage in the business of plumbing may apply to the Board of Examiners in the city or town where he may be. This local Board will subject the applicant to an examination, and if he pass that examination to their satisfaction the Board will certify this fact to the Board of Health, which thereupon must issue to the successful applicant a license. The license when once granted is good throughout the Commonwealth. It is apparent, therefore, that plumbers who have been examined in one place may do work in another place. Now these Boards of Examiners will probably have no uniform standard of excellence which they will require applicants to attain, and it may frequently happen that plumbers who have obtained a license in a place where the examination was easy, may do work in another place where the standards are high and the examinations are hard. It is of course impossible to secure complete uniformity in the examinations to which plumbers are to be subjected from time to time by the different Boards of Examiners; but it seems to your committee that it would be possible for some central advisory body to be created which could exercise some influence over the standards of excellence to be maintained in the examinations throughout the Commonwealth. In pursuance of this idea your committee would suggest that the State Board of Health be given the right to advise local Boards of Examiners with respect to examinations of plumbers, and the right to establish a minimum per cent. which all applicants must be required, at least, to obtain. And your committee would suggest further, as the most important recommendation in this connection, that local Boards of Examiners be required to submit their examination papers to the State Board of Health for approval or disapproval before they are actually used in examinations. Your committee have suggested that this central advisory authority be the State Board of Health; but some other board might serve the purpose equally well, such as the Board of Civil Service Examiners.

Section 4 of the Act provides for the organization of the Boards of Examiners, for the manner in which examinations of applicants shall be conducted, and for the granting of licenses to plumbers, and your committee are not at all sure of the advisability of making any changes in this Section. One suggestion has, however, occurred to them which it might be well to discuss. It is possible that cases may occur where a plumber who has been licensed in a certain place and who is doing business in another place, may

be a very unsatisfactory person to the Board of Health of the place where he is actually doing work. It not infrequently occurs, as all members of the Association must be aware, that certain plumbers cause much trouble to local boards of health by continued and apparently wilful violations of the rules and regulations regarding plumbing. Such violations may be carried to an extent which would warrant the local Board of Examiners in revoking, under the provision of Section 7 of the Act, any license granted by themselves. It may be well, therefore, that the Board of Health of the place where a plumber is actually doing work, may make complaints in regard to violations of rules to the Board of Examiners where the plumber received his license, and request that such license be revoked. In the event of refusal it might be well to allow an appeal to the State Board of Health, or to whatever body may be appointed as the central authority having jurisdiction over Boards of Examiners.

Section 5 of the Act provides for the appointment of inspectors of plumbing. This Section has caused the most comment and the most diversity of opinion among those whose duty it is to enforce the law. The principle controversy is over the requirements of the Statute that inspectors of plumbing appointed under the Act shall be "practical plumbers." This provision was undoubtedly inserted for the purpose of giving plumbers control over the enforcement of plumbing regulations. The effect is to exclude from appointment all persons, however well qualified they may be by knowledge of sanitary engineering and of the needs and requirements in cities and towns in regard to plumbing, unless such persons are "practical plumbers." Such exclusion is open to the obvious objection that it appears to be a piece of class legislation; but passing over that objection we come to a more practical one. The language used appears to be open to various constructions. There seems to be as many minds as there are men as to what constitutes a "practical plumber," and your committee would suggest that if it were possible, in the event that this provision of the Statute is retained, some definition be given of what is meant by the words, "practical plumber."

But the objection of your committee goes further than to the mere vagueness of the Statute. Boards of health have been seriously embarrassed in their efforts to obtain competent men for inspectors of plumbing by the fact that in many instances the most competent persons are excluded from consideration, because such persons are not plumbers in any sense of the word. Your committee believes that at least boards of health should be left free to appoint the most competent person, no matter what his trade or business may be. We believe, however, that no inspector of plumbing should be appointed who has not a thorough practical knowledge of all that pertains to plumbing, and we, therefore, would suggest that the words,

“who shall be practical plumbers” shall be stricken out, and in their place a provision inserted that any person before appointment as an inspector of plumbing, shall pass a civil service examination designed to test his skill and technical knowledge in [practical] plumbing work as relating to house drainage and plumbing ventilation.

One other clause in Section 5 has occasioned more or less difficulty. This provides that inspectors of plumbing shall be appointed by the board of health or inspector of buildings. By reference to Section 2 of the Act we find that the intention apparently is not to give any power to inspectors of buildings except in cities and towns where such inspectors of buildings have control of the regulations regarding plumbing. There is, however, no direct reference in Section 5 to Section 2, and Section 5 is therefore open to the construction that in all cases either the inspector of buildings or the board of health may appoint the inspector of plumbing. Your committee have been informed that considerable controversy has arisen in some instances in regard to this apparent conflict between the powers of the board of health and of the inspector of buildings. Undoubtedly the intention was that the inspector of buildings should appoint the inspector of plumbing only in cities and towns where the inspector of buildings has control of the regulations regarding plumbing, and your committee is, therefore, of the opinion that the Act should be so amended as to make this matter clear.

Your committee have not found time to draft amendments to the Act covering the foregoing suggestions, but the amendments suggested might be very easily and briefly expressed, and without difficulty incorporated in the Act without destroying the structure of the Act itself. We believe that the duty of drafting such changes as may be advisable should be entrusted to a committee to be appointed for that purpose, who will follow the suggestions and instructions which may be given by the Association upon the consideration of this report. We are informed that new bills may be introduced into the Legislature up to February 1st, and it would be advisable, therefore, that any amendments be presented to the Legislature before that day.

Respectfully submitted,

E. IRVING SMITH,	} <i>Committee.</i>
J. T. MCCARTNEY,	
EDW. N. QUINN.	

HON. E. IRVING SMITH. I had not intended to make any remarks in connection with this report, because it expresses fully my own opinion in regard to this Act. As some of us suggested at the meeting which was held at Princeton, the Act is open to a great many objections, and it needs

to be thoroughly overhauled, and those defects which have become apparent to the committee have been pointed out in this report. I should, however, as the matter has been much mooted, like to ask the indulgence of the Association to read a short opinion by the City Solicitor of Waltham on what constitutes a practical plumber. The opinion was prepared after he and myself had conferred together considerably in regard to the definition of those words, and this will show what at least is one individual opinion in regard to that matter:—

OCT. 23, 1893.

HONORABLE BOARD OF HEALTH:

Gentlemen:—Your Board has submitted to me two questions. 1st, What is your duty under Chapter 477 of the Acts of 1893 in reference to the appointment of an Inspector of Plumbing? 2d, What does the expression “practical plumber” mean in that Act?

The Act of 1893 says, “The Board of Health shall, within three months from the passage of this Act, appoint one or more Inspectors of Plumbing, who shall be practical plumbers, and who shall hold office until removed by said Board for cause which must be shown.”

This Statute is imperative in its terms and for the first time the Legislature has expressly created the office of Inspector of Plumbing, and has regulated the duties, tenure of office and qualifications of the incumbent. The effect of the Statute may be shortly stated as follows:—

1st. Before the passage of the Act a person employed as Inspector of Plumbing held his position at the pleasure of the Board; since its passage the appointee can only be removed for cause which must be shown.

2d. Before the Statute, the person employed need not necessarily be a “practical plumber;” since the Statute the requirement is otherwise.

3d. Before the Statute he was only an employee of the Board, wholly under the control of the Board, except so far as regulated by the ordinances of the city; since the Statute the position is of a quasi-official character with duties prescribed by the Statutes of the Commonwealth. The position of Inspector of Plumbing before the Statute differs widely from the position of Inspector of Plumbing after the Statute, first, in the duties of the office; second, in the tenure of office of incumbent; third, in the qualifications required; these considerations combined with the imperative words of the Statute, “The Board shall within three months appoint,” etc., make it clear that your Board should make a formal appointment of an Inspector of Plumbing as required by the Act of 1893.

In considering the meaning of the expression “practical plumber” we must first define the word “plumber,” the word “practical” being of

secondary importance. A plumber is a man who follows or has followed the business of plumbing; he is one who has held himself out to the community as such and been commonly recognized as such; he must have been so identified with the art or business of plumbing as to be classed with persons in that business; there could be no safer guide than general reputation in the community. You would apply the same tests as you would in determining whether a person were a butcher or a baker; a person is not a butcher if he occasionally slaughters an animal but follows some other line of business; nor is a person a baker who occasionally cooks food: the test is this: have his previous pursuits ever led him or the community in which he lives to characterize him as a "plumber?"

If you find that an applicant is a plumber, then you must decide whether he is a "practical plumber." A "practical plumber" is one who can take a kit of tools and do any ordinary job in plumbing. It makes no difference where he acquired the skill, or when, or how; no length of time as an apprentice is required in this country.

It is for your Board to decide in each case whether the applicant is a plumber; and having decided that in the affirmative, whether he can, with his own hands, do the work required of a plumber.

It is your duty, therefore, to make a formal appointment of a "practical plumber," as above defined, to fill the position of Inspector of Plumbing.

Respectfully submitted,

CHARLES M. LUDDEN, City Solicitor.

The report of the committee was then accepted.

The CHAIRMAN. The whole subject is now before you, gentlemen, and you may either go on with the general discussion or take some special action with regard to the recommendations of this report. Perhaps the most satisfactory way would be to go on with the general discussion. Of course, if such a motion is made, it can at any time be entertained. If that be your wish, I will call upon some of the members whose names appear upon this list. The Association will be glad to hear, I think, from Mr. Davlin, of Somerville.

Mr. DAVLIN. Mr. President and Gentlemen of the Boards of Health: I first desire to thank you for the opportunity that has been given to me to be with you this afternoon, not only because it has been a pleasure to me to see so many of you and meet you personally, but because it has given to me a greater liberty in disregarding the advice of my physician, who tries to limit me in regard to my diet [laughter]. I am satisfied that in the medical profession, as in the profession of which I have the honor of being a member, that of hydrostatic sanitary plumbing, there are rules that can be

evaded [laughter], and advice that can be disregarded, but the bill is the same in either or both cases [renewed laughter].

In regard to the matter which seems to be pertinent to this meeting, Mr. President, I perhaps feel a deeper interest in it than a member of a board of health pure and simple, because it appeals somewhat to me in my calling, the only trade or business at which I ever worked, and it has been my desire for many years, and that of my associate master plumbers, that some legislation should be enacted in connection with the trade — I was about to say, but shall I say the profession — of plumbing?

Nine years ago as a delegate from the Master Plumbers' Association of Boston and vicinity, I had the honor of attending the national convention of master plumbers at Deer Park, Maryland, on top of that beautiful mountain, you will remember, sir, where our honored president brought his beautiful and blushing bride. At that convention the question of the laws in the different cities and municipalities regulating plumbing was discussed at length. Each delegate to that convention had some sort of an essay to read in connection with it, and when I received the invitation to attend this gathering this afternoon, I picked up this essay that the Boston Association presented, and if I have time now, I would like to read it (it is brief) to show you that the master plumbers have long been considering just how to present to the Legislature of Massachusetts some suggestion for a law that would be broad and equitable and acceptable to that body. It is not a new thing. It is something that we have long considered necessary,— some broad, equitable law to regulate the art or trade or calling of plumbing. The master plumbers throughout the country have recognized this, and have endeavored in that organization to bring this matter about, as well as other matters, and therefore I think that I may be permitted, if the time will warrant, to read this statement that was sent in from the Boston Association. It strikes nearly and closely to the subject under consideration this afternoon, and therefore I believe it is pertinent to it. Some folks have found fault, I am told, with the charges for plumbing, but after having labored in that profession for more than thirty-five years, I feel that we should be looked upon as philanthropists [laughter], making, of course, a moderate charge for our services [renewed laughter], and no one yet, as far as I am personally aware of, has ever found any fault with us.

THE PROGRESS OF PLUMBING.

Of plumbing, as of many other useful arts, it may be said that its progress has been slow, but markedly regular and intelligent.

From time to time theories have been advanced by visionary sanitarians whose careers, like their views, have been meteoric, but to the scientific writings of a few truly able men — thoughtful, earnest efforts, and

skill of the practical masters and journeymen — belong the credit of lifting the plumbing trade from a crude and, indeed, chaotic condition to a place in the foremost rank of our important industries until, at the present time, no branch of building construction is considered of greater importance, or receives more conscientious attention, than that of plumbing and drainage.

Well may we be pardoned for self-gratulation that such is the fact, otherwise the simile of the painted sepulchre would have renewed and intensified exemplification in every edifice erected, from the humblest to the most expensive: for science has conclusively demonstrated that from impure water, air and the different noxious gases, come the germs of many of the most destructive diseases that afflict mankind.

"Not existence, but health, is life," said the great epigrammatist, Martial.

And the poet Thomson exclaims:

"Ah, what avail the largest gifts of Heaven.
When drooping health and spirits go amiss?
How tasteless then whatever can be given.—
Health is the vital principal of bliss."

These sentiments, varied by circumstances and in methods of expression, have formed the theme of the physiologists, economists and poets for ages; and it is gratifying to know that the honorable brotherhood here represented has been so largely instrumental in effecting the better preservation of health, and, consequently, in augmenting the term, usefulness and enjoyment of life.

Let us briefly consider the means by which this great humanitarian reform has been brought to its existing degree of effectiveness, and those whereby it may be still further advanced toward perfection.

The instinct that prompts men to provide themselves with shelter is common to every division of the human race: and upon the height of civilization attained depends the design, convenience and garniture of the structure for that purpose.

In this favored land we build substantial dwellings of marble, stone, brick and wood, and enshrine our Lares and Penates in temples for whose comfort and decoration the cabinet-maker, the upholsterer, the artist, the sculptor and the florist are called upon to provide and elaborate the productions of the Orient, the Occident and the Antipodes.

Unfortunately until within a few years, certain appliances and devices now considered absolutely indispensable to cleanliness and purity of atmosphere, were held to be of secondary importance to elaboration in other and far less useful directions; but the warning voice of Science, the utilized experience of innumerable members of our craft, and the quick percep-

tions of the people, caused a revolution, the scope of which was as wide and effectual as its suddenness was phenomenal.

To the public's demand for protection against the evil effects of bad domiciliary drainage and ventilation, the plumbers were prompt to respond by devising a system whereby fixtures are now placed in any desired part of a building, and so arranged that an ample flush of water so quickly disposes of sewerage matter that no taint can be detected in the atmosphere even by the most fastidious.

Moreover, progress in this direction has been such that by the proper placing and fitting of sewer, waste and drain pipes, and the use of large-size flushing pipes and bowls, in conjunction with a practical plan of local ventilation, a bathroom or water-closet may be located in any part of a dwelling without perceptible vitiation of the atmosphere,—an achievement in strong contrast with the old methods of plumbing, whereby the odor from an untrapped and unventilated waste pipe saluted one's entrance into the basement of a building, and with increasing intensity accompanied the ascent to the bathroom, where a pan water-closet, with its accumulation of filth, permeated the air with a pungency almost overpowering.

Confronted with "improvements" of such a questional character, is it to be wondered at that many began seriously to consider the advisability of a return to the primitive accommodations of their ancestors, viz., the outhouses and wash-bowls and pitchers?

At this stage of affairs the brains—the real intelligence of the trade—came naturally to the front, and by well-directed, persistent efforts, induced legislation in most, if not all, of our large cities, with the result that mandatory protective measures in the matter of drainage and ventilation were secured, which served as a foundation whereon has been built a system of plumbing so far in advance of that in vogue but comparatively few years ago that no just comparison can be instituted between them; and by which all persons who are willing to comply with the requirements of the law and to pay a fair price for honest work honestly performed, can have their plumbing done in such sanitary perfection as to relieve them from all anxiety as to sewer gas or any other mephitic dangers now universally acknowledged to be menaces to longevity, more especially to the dwellers in great cities.

Under the stimulus of important results already achieved, then let us, one and all, seek to maintain the high standard of our calling, and increase its usefulness, by assiduous study of the various causes of its exercise.

Perfection in mechanical details, while greatly to be commended and encouraged, is yet too apt to be considered the chief desideratum; but unless there be a thorough insight into the elements and conditions which demand our ameliorative aid, no permanent good can be accomplished.

Every member of our order should be familiar with the nature of the

country, soil and water in his immediate vicinity, and note with care every incident cognate to his interests, in order to form an intelligent opinion when called upon to exercise his functions in any habitation.

Certain medical authorities assert that water, if drawn through pipe of a given description, is unhealthy, if not absolutely dangerous; while others, equally respected, aver that the same water is impure in its source, and that, whatever may be the manner or material of its conduit, the danger is undiminished.

To discriminate in a matter wherein doctors disagree may be a delicate undertaking, and unwarrantable usurpation of prerogative; but upon the plumber whose reputation rests upon established evidences of his acuteness, skill and judgment, the sensible householder will rely, in preference to the theoretical vaporings of any disciple of Hippocrates, however strong his backing.

It has been said that such a thing as pure water does not exist, and in view of recent developments one may well hesitate to doubt the asseveration.

But to ascertain the purest possible supply, to know the best means of procuring the same, to be capable of its analysis, to understand the drainage, ventilation and all concomitant essentials, should be the study of every plumber desirous of attaining that eminence which pride in his profession should inculcate.

Our field is broad; our opportunities present and promising. By honest earnest effort the progress already made may be so accelerated as to leave nothing to be desired in the way of reputation and substantial emolument.

The foregoing, Mr. President, presents the ideas and convictions of the master plumbers of the Master Plumbers' Association of Boston and vicinity. For years we have been trying to secure some legislation governing the practice and art and calling of plumbing. It had been considered by our Executive Committee time and time again. We had discussed the matter in its various phases, and we were almost ready to present to the Legislature our ideas to secure legislation, when we became cognizant of the fact that a gentleman from Worcester, Mr. ——————had, through the representative from that part of the State, a Mr. Roe, introduced a bill looking to the regulation of plumbing, and myself and others of the Master Plumbers' Association of Boston, who were members of the legislative committee, attended the hearings. At those hearings it was desired that the master and the journeymen plumbers, as the Act reads to-day, should demonstrate their fitness before a competent board before being allowed to pursue their branch. To the Master Plumbers' Association of Boston it appeared that the proper legislation would be to inquire into and ascertain the ability of any who might desire to enter business as a master plumber, and put upon him the responsibility of his employees. For instance, I have,

say, a couple of men and put them in a building. They do the job apparently perfectly, and they leave it. Those men are not in my employ permanently, and they go then to New York or Ohio or Maryland, and after a short time it is demonstrated that some portion of the plumbing or drainage of that building is defective, and I am holden for the work.

Now if the bill was drafted so that the responsibility rested upon the master plumber, who is supposed to have a permanency of position and location, and anything wrong should be demonstrated to us within any reasonable time, I think that would be reasonable. The Senate chairman asked me if I would draft a bill along those lines, and I invoked the aid of Mr. John S. Damrell, which he readily granted, and the hearing was adjourned for two days, I think, to give us time to present a bill according to those ideas, placing the responsibility of performing the work properly upon the master plumber who had been entrusted with it in the first place, and he, in turn, of course, being responsible also for the men whom he employed to do this work. We presented a bill along those lines, and it went to the House. I understand immediately there was amendment after amendment added to it. I am informed that there were at one time seventy-five or eighty amendments to it pending, and as a result, to use a hackneyed phrase, it was emasculated. I suppose you medical gentlemen know what that is. I have an indefinite idea what it is. I am not old enough yet probably to wholly understand it; but they put it before you in the present shape that it is in. It is not satisfactory to me; it is not satisfactory to my associate master plumbers, because it does not give to the householders, and that is what the Legislature seeks to give, as I understand it, that degree or measure of protection that it is desired they should have, and it seems to me that there is something more that should be done in relation to that bill. In fact, the best way, it seems to me, would be to tear it up and write another bill, though I must state, of course, that something has been gained in having this present bill enacted by our Legislature. It is a step forward; it is much better than what has been had before.

Now, in regard to the word "practical," which I understand has been discussed by this Association, from reading the report of the last meeting; there has been a great deal of discussion to define what was meant by "practical." At the time that the bill was presented before the legislative committee, a committee from the Journeymen's Association appeared, and they wanted to have that bill read that the Board of Examiners should consist of the chairman of the Board of Health and the journeymen plumbers, and that an engineer might be added to it. They wanted the words "journeyman plumber" in the bill as one of the examiners of whoever might desire to be examined as to their competency, and so the Legislature, when they got it into their hands, amended it so it read "practical plumber," and left

that stumbling block over which so many of us have been falling. What was meant by that was that the members of that board should be men who understood the business of plumbing. It seems to me it does not call for any great display of knowledge to determine what is meant by a "practical plumber."

I read in the paper last night that one of the Board of Aldermen in the city of Boston had sued a party that had placarded the walls before election. — "Look out for the boodler, and John F. Dever, who is a candidate for the Board of Aldermen." implying that Mr. Dever was a boodler; and upon the matter being presented, the question arose, what did "boodler" mean? It did not appear in any of the dictionaries, and therefore there was no offense at all [laughter] in calling a man a boodler, because there was no such word in the dictionary. One of the lawyers suggested that perhaps in the Century Dictionary it might be shown what it meant. The Judge said, "We take common usage as the criterion of what is meant by a word," and so it is in the matter of "practical plumber." Common usage defines what is meant by the term, and that is, a man who understands how to put plumbing work together, — a man who has put it together, a man who can put it together. That is what we understand by a practical plumber. That was what was intended to be understood before the legislative committee when that was interpolated in the act. There is no question about it at all.

It has been said that a man who can lay out a job of plumbing, can draw lines upon a paper, can locate the different fixtures, although perhaps he cannot put them there, is as practical a man as he who can.

Well, supposing that you, Mr. Chairman, had a house to plumb, and you secured a man who could draw up plans of that plumbing, who could locate the bathtub and lavatory and water-closet and all the fixtures, but when you got ready to have that plumbing done, the "boss" had gone a-fishing, the practical man, as we call him. — how long would it be, let me ask you, before you had your plumbing done? It seems to me that demonstrates what "practical" means. There is no question about it at all. So that this matter, as I look at it, and as I believe my associates look at it, should go back to the Legislature and be enacted properly. I am aware of the fact that no legislation can be affected that there won't be loopholes in. You remember, sir, that a celebrated man, one Daniel O'Connell (I presume you have heard of him) [laughter], said on one occasion, "There never was a law enacted yet that you could not drive a coach and four through." You know how our herdics drive along our streets, and a herdic will be driven through that before long, and never strike a hub either, but it is better to have some law than none at all. I believe, as I believed a year ago, that that Act should read that anyone who might desire to engage in the business as a master plumber should appear before a board of examiners and demonstrate his fitness and ability

for that business. In that way you cover the whole ground. It seems to me it would make it better for the members of the Board of Health. We ourselves would settle the question as to whether a man who has received a license in Boston can go in Worcester, or Cambridge, or Springfield. This thing would settle itself right there in that one clause. The whole matter would come to a head, and we would know who was responsible for any work. He would have a fixity of tenure; he would be in the same place year in and year out, so he could be got at in case his work was not properly done.

Now, I will conclude by saying, I thank you very much for being permitted to be with you this afternoon. I dislike always to call upon doctors any way. I never went to a doctor feeling bad yet when I did not go away feeling worse, but this afternoon I hope will be an exception. [Applause.]

THE CHAIRMAN. I will ask you to listen to Mr. McCartney, of Worcester.

MR. J. F. MCCARTNEY. Mr. President and Gentlemen of the Massachusetts Association of Boards of Health: I do not think I can add much to what has been already said on this subject by Mr. Smith, the chairman of this committee which you appointed at the last meeting, and inasmuch as I was a member of that committee and assisted in drafting the recommendations which he offered this afternoon, I think it would be wiser if I should at the present time at least refrain from the discussion, and allow some other members of the Massachusetts Boards of Health to discuss the matter; therefore I will withdraw for the present in favor of some other member of the Association.

THE CHAIRMAN. Mr. Mitchell, we shall be glad to hear from you upon this subject.

MR. MITCHELL. Mr. Chairman, I trust you will excuse me from making any remarks. My colleague here has covered the ground pretty thoroughly. I am here merely to be educated in the matter. I desire that we may have some better law in the future, but I would rather listen to remarks from some other gentlemen than talk myself.

THE CHAIRMAN. Mr. Griffith's name, of Boston, stands next upon the list. He does not seem to be present, and I will call upon Mr. Tower, of Springfield.

MR. TOWER. Mr. Chairman, the gentleman who has spoken before me has taken the wind out of my sail. I would say the subject is, of course, of such a nature that a good many different points might be taken up. I think that the committee in making the recommendations have taken two that I had already in mind, and I will give way to a general discussion, which I would like to hear in preference to making any remarks myself.

THE CHAIRMAN. Is Mr. Lyman of Holyoke present?

MR. LYMAN. Mr. President, I have enjoyed the remarks of Mr. Davlin very much and I cannot add much to what he has already said. I agree with him in the opinion that this matter of plumbing should be carried out as he has described it,—that a master plumber is a man who can take his kit and work at the trade. In the city of Holyoke we have taken that matter in hand, and appointed a master plumber and a journeyman who can go to work and do a job, who can point out defects, and can tell those who are to do the work how to do it. It seems to me that is the way it should be done everywhere. That is about all I can say to-day.

THE CHAIRMAN. Mr. Mills of Arlington.

MR. MILLS. That is my name, Mr. President. I am troubled with that extreme timidity and excessive modesty which characterizes all master plumbers. [Cries of "Hi, Hi," and applause.] I represent the town of Arlington, which stands high—alphabetically—[laughter] and try to bear my blushing honors meekly. I am not ready, as some are, to enter upon a wholesale criticism of the law as it stands. I think its good effect has been very noticeable in the town from which I hail. The chairman of its Board of Selectmen is also chairman of the Board of Health, acting as such, and is present here to-day by invitation. The board took action in accordance with the provision of the law, and it was my fortune or lot to be chosen as inspector for the town. A great need has been found of inspection, which can be made, on the whole, in accordance with the terms of the bill or duty made incumbent upon the inspectors of the city of Boston, where plumbing inspection is under the control of building inspection only and solely, but, of course, an inspector of plumbing can be chosen to act as an agent of a Board of Health and perform such duties as they may desire.

Among the very first duties I was called upon to perform there was to visit the homes of some of the working people where diphtheria existed in threatening form, almost an epidemic, in the very outskirts of our town, near Cambridge, and their imperfect drainage was the supposed cause of the disease. I went into three houses the first afternoon where diphtheria existed and in three of those houses there were two tenements, and in only one building was there used a trap under the kitchen sink, which was supplied with the town water, and the waste was conveyed there very imperfectly through a pipe discharging in a so-called cesspool, a sort of hole in the ground in the rear of the house, an arrangement made by the cupidity of the landlord. This state of things was remedied under the provisions of this law, which I consider a start in the right direction. There are places in the town of Arlington which need looking after in the way of remedying imperfect water-closets and providing proper drainage. One of the most prominent churches in town is supplied with very poor fixtures, and they are tolerated because they do not know what can be substituted, but they are not up to the require-

ments of modern plumbing. It is the duty then of the inspector to make suggestions as he goes round and to make recommendations which can be followed, but no very decided action has been taken on account of the lack of regulations which can be enforced, and it is thought best that they should be formulated by the town before any attempt is made to have them strictly enforced.

I endorse the report of the committee, which I think is in the right direction. I hesitate about taking up any further time, except to answer any question that you might wish to ask, but I suppose you would rather discuss the matter which is brought before you and take action upon it, and therefore will resume my seat. [Applause.]

The CHAIRMAN. I see here a member from the city of Boston. Perhaps Mr. Hicks will have something to say upon the subject of plumbing.

Mr. HICKS. Mr. President: I came here to learn rather than to impart any information. I have been connected with the Board of Health so long that I have almost obtained my majority, but I do not know that I can add anything to what has been said. I am not prepared to commit myself to anything that has been said by the committee of this Association; that is, I would not want to commit myself to the report of the committee in its entirety, neither would I commit myself to what has been said by the representative of the Master Plumbers' Association.

There has been a great deal said about what constitutes a practical plumber. I think there is just about as much opportunity to discuss what should constitute a master plumber. I know master plumbers in this city—I suppose they are to be called master plumbers because they are employing plumbers and doing plumbing work—that is, business is entrusted to their hands. I think we could have no better place to put responsibility for any defects in work than we have now. There are plumbers in this city who are employing plumbers, and who have been employing plumbers for years, whose work would hardly bear inspection by anybody, a master or otherwise.

Mr. DAVLIN. Even by the Board of Health.

Mr. HICKS. Even by the Board of Health. The representative of the Master Plumbers' Association has said that a member of the Board of Examiners should be a practical plumber or a journeyman plumber. He does not criticise the fact that the majority of that board is not to be a plumber at all. One is to be the chairman of the Board of Health. Very seldom, in large cities at least, is the chairman of the Board of Health a practical plumber. The inspector of buildings is not necessarily a practical plumber, so it does not seem to me that necessarily an examiner should be a master plumber or a competent plumber, for it may be that only one, a minority of the board, would have more weight than the other two, but votes count in this country.

Mr. DAVLIN. It seems to me that some people want to vote twice,

and I recognize the fact as well as the gentleman does, but there is no law that has ever been enacted that may not be picked to pieces, but this is a step in the right direction.

Mr. HICKS. These examinations do not always bring forth the best results. In my own department in the city of Boston I know at one time we had candidates certified to us, and those who stood highest on the list — I mean by that those who received the highest per cent. from the examiners — did not prove to be the best men by any means. The main thing, in my mind, for the inspector, is a man's business qualification, his judgment, and that is a thing which we can hardly examine a man upon in any examination which we can make.

The amendments to the law which have been suggested by your committee, I think are very good. I think they are open to criticism, as is everything else that ever emanated from the hand or tongue of man. Everything that I have seen yet can be improved upon by somebody, and I think that is very susceptible to improvement. I have referred to the remarks of the gentleman who represents the Master Plumbers' Association. I speak of him because he appears to have made the most prominent remarks here to-day, and I trust he will excuse me for criticising anything that he may have to say.

Mr. DAVLIN. Being a plumber, I am used to it, sir. [Laughter.] I suppose plumbers are made to talk about. At any rate, they appear to be callous. [Renewed laughter and applause.] As sanitary men I suppose the Association is not entirely devoted to the question of plumbing. There are many other things which pertain to sanitary science that are, perhaps, entirely separate from plumbing. Of course, we have a great deal to do with plumbing, but very many members are more or less connected with other sanitary matters. This is merely one phase of the business. We have to give attention to other matters which we consider just as important as plumbing. Of course, if you have not good plumbing, you have an unsanitary condition of affairs, but there are other things which can be taken into consideration which are of as much importance. We find a want of cleanliness as important as bad plumbing. You can get up almost as bad an odor and unhealthy condition of affairs from an uncleanly condition of premises as you can from defective plumbing at least. Within a week I have had occasion during the night-time (for that is the only time to visit certain quarters of the city, after people have gone to bed) to go to their quarters to see what is to be seen, and I think if the gentlemen of this Association could go around in the night anywhere from one to two or three o'clock in the morning, and go into the quarters in the crowded section of the city and into lodging houses, they would see things there which they may read of as existing in older countries, but hardly would be prepared to find here.

The question of plumbing, Mr. President, I am not prepared to talk about at the present time, and, in fact, I am not prepared to talk upon any question, and this is rather a sudden call. I trust you will excuse me from saying anything more. [Applause.]

The CHAIRMAN. The subject is open for general discussion, gentlemen. We shall not only be glad to hear anything that can be said upon the subject of plumbing in general, but with regard to these recommendations which have been submitted to you by the committee. It is important that some action should be taken upon them, and I would suggest that we either continue the discussion or that the Association prepare itself for some definite action upon the report of its committee.

Dr. HARRIMAN, of Natick. Mr. Chairman: In the report of the investigating committee there was nothing said on Article 6 of the law, which provides for the adoption of certain rules and regulations by a town or city, and there has been a question on the part of many boards whether the Board of Health has the right to see that the town or city adopt such rules. I would like to have some light from those who know of this Article 6, which did not come under the head of the matter given to this investigating committee.

The CHAIRMAN. Perhaps Judge Smith can help us to answer the question which Dr. Harriman has put.

HON. E. IRVING SMITH. Mr. Chairman, the very question suggested by Dr. Harriman has been considered, I know, in our own city. You are aware that the Section in substance provides that a city may pass an ordinance which will provide certain rules relating to plumbing, but it appears that the Section leaves it open to the Board of Health to pass additional rules and enforce them. The way in which it seemed to be advisable in our own city to proceed was for the Mayor and Aldermen to pass an ordinance which embodied our rules in relation to plumbing as they stood at that time, and such further rules as were necessary were to be made by the Board of Health from time to time, and we never thought that there was any doubt but what all of the rules, whether embodied in the ordinance or any rules of the Board of Health, could be enforced.

If it is the wish of the Association, it seems to me to be well for whatever committee considers this matter further, to look at that matter more carefully and see if there is really a valid objection or doubt in regard to that clause of the Statute.

While I am on my feet I might as well say, as I made no remark in particular outside the report which was read, that the committee felt that this was a move in the right direction; that there were these imperfections in it; and that until to-day we did not know what the cause was. It appears that the gentleman on my left prepared a bill which was undoubtedly free from

all objections, and he is entitled to the glory of this step in the right direction. He is entitled to all the glory as a plumber, it appears further, because the bill was saddled with amendments which destroyed some of the best features that he had introduced into his draft.

Mr. DAVLIN. That is right.

Mr. SMITH. So I understood [laughter], and I am glad to get at the way in which that Statute was drafted. Now, I hardly think it would be advisable to repeal that Statute altogether. We have something to go upon now. The Statute is a move in the right direction, but if we can improve it, it seems to me that it is within the province, and in fact it is the duty, of this Association to make such suggestions as they deem proper, and bring those suggestions to the attention of the Legislature. [Applause.]

Mr. HATHAWAY, of New Bedford. Mr. President and Gentlemen of the Association: I believe it is the statute law of this Commonwealth that Boards of Health of towns of over 5,000 inhabitants must pass upon the regulations, or may,—I do not know as it is obligatory,—and it puts the responsibility of plumbing and house drainage just where it belongs.—on those Boards of Health. They are appointed presumably because they are fit to consider such questions and to solve them. With regard to all house drainage, or, for that matter, all the drainage of the city, the appointment of an inspector comes under the civil service rules, and I can say from my own experience that that does not necessarily result in having a poor inspector, because he must be appointed under civil service rules. You can get a good man even under civil service rules, and so far as the examination of plumbers is concerned, it seems to me that the responsibility for any plumbing work, providing the plan is approved by the Board of Health, coming up to the requirements imposed by any Board of Health,—that then the responsibility of any bad work, it seems to me, is on the plumbing firm which undertakes it,—on the master plumber, just where it belongs, and just where it will rest without any special legislation. I think we can safely leave to him the matter of employees, for I think if he finds he has a man in his employ who is not a practical plumber he will soon discharge him and replace him by one whom he considers practical; so it seems to me that this present bill might be torn up, and whether or not a new one should be substituted for it, is a question for us all to consider. [Applause.]

Mr. HICKS. Mr. President, some years ago I had occasion to prosecute a person for not furnishing a water-closet. He had in the back yard, attached to the dwelling, what was called a privy-vault, an excavation in the ground lined up with brick, and had an overflow connected with the drain. I did not call that a water-closet, but an ordinary privy-vault, and I made a complaint before the Board, and the lawyer whom we employed raised the point that it was a water-closet because in his house, which was situated about 25

or 30 feet distant, in the sink was a faucet, and he could attach a hose to that and squirt water into the vault, and that made a water-closet of it.

SECRETARY WOODWARD. Mr. President, Dr. Coffin has been obliged to leave to catch a train, but he asked me to present a question to the Association. The town of Arlington have passed some plumbing ordinances after a long struggle, and in attempting to enforce them have found that there is no penalty imposed for violating the law, and he wanted me to ask if there is a penalty under the general Statute or under this special Statute?

MR. NEWCOMB of Salem. Mr. Chairman, I always enjoy these meetings, but I have been particularly entertained this afternoon, in view of what we have heard from the master plumbers; but the point to which I specially wish to refer is this: Are we not organized for the sanitary welfare of our people in this Commonwealth, and is it our duty to hunt for loopholes in the wall or to protect the people? Another point; A gentleman over at my right said some people appeared to be a little callous. I think from what we see in the city of Salem it might be spelled c-a-r-e-l-e-s-s instead of c-a-l-l-o-u-s.

I agree with the gentleman who has spoken in regard to securing good men by an application of the civil service law. I believe the city of Salem to-day has as good a practical inspector of plumbing as any other city in this Commonwealth, and I think it can be proven. The expense is the evil in carrying out our plumbing regulations. A while ago there was a case of scarlet fever on a street in our city. The property belonged to a gentleman who might, perhaps, say he would sell it. I do not doubt it, if he could get his price for it, but the house was defective. That is to say, in going there we found bad odors; that led to an investigation, and we found that it was a question of bad drainage. Attention was called by our Board to the matter, and the gentleman requested to visit the place. He said he had only just fixed it up, but I said that he ought to adopt such and such things and do so and so. "Well," he said, "I have just put one into my own house." He had, but there was a tenant and his family in the other house whose welfare he did not seem to care for. I suppose you may say human nature is selfish, or charity begins at home; and although the present law may not be perfect, it is better than no law at all.

MR. HATHAWAY. If there is such a state of things in Salem or in Arlington, I should say that it is the duty of the Board of Health at once to remedy such a matter, and there is plenty of law to do it. There is no doubt but that such a man can be punished, and in Arlington I should suggest that proper plumbing laws be drawn up.

MR. NEWCOMB. Mr. Chairman, in reply to the gentleman I will say that

I will wager that there is no city or town in this Commonwealth that we can go to where we cannot find something there as bad as anything in the city of Salem.

Mr. HATHAWAY. I do not mean to say that everything is perfect in New Bedford. I have no doubt you can go around and make an investigation in the city of New Bedford and find many things that need to be remedied, but I do not think any further law is needed to enable the inspector to remedy the trouble, so far as New Bedford is concerned, at least.

Dr. DAVENPORT. Mr. Chairman, there are one or two points about this Statute which have not been mentioned to-day that I think are important. Among the members of the Board of Examiners it provides there shall be a member of the Board of Health, the Inspector of Buildings, if there be one, and a practical plumber; but in case there be not an Inspector of Buildings, then it provides that there shall be a practical plumber. If the gentlemen will read over the Act, they will see in one Section where the Board of Examiners are spoken of, that the Act does not provide clearly that in case there is not an Inspector of Buildings there shall certainly be three members of the Board of Examiners, two of them being practical plumbers. It was undoubtedly intended to be so, in the case of my own board, and the question was raised and strenuously upheld by one member that in case of there being no Inspector of Buildings, then the Board consisted of but two members. There are but two towns in the State which have an Inspector of Buildings.

Then comes the question, what shall be done in the case of a practical plumber? Shall we take some plumber who is engaged in the business in the town? If so, who is going to inspect his plumbing? which becomes a serious question. The Board of which I am chairman called on me to come down and consult with Capt. Damrell, Inspector of Buildings. Then I went to the Plumbers' Association, and then went to the Chairman of the Examiners of the Civil Service Board. It so happened that they all recommended one man, which man, after consulting with him, we employed on trial for a few months, he remaining a resident of Boston. We were pleased with him, and told him if he would come, we would engage him for the remainder of the year, and he came and settled with us in the town and obtained a residence. The next year we engaged him for the entire year. The result has been very satisfactory, but if we employed some plumber located in the town, we might have had difficulty. We had no Inspector of Buildings, so to meet the difficulty of having two plumbers on the board, and the difficulty of getting two plumbers who were agreeable and proper, the town appointed an Inspector of Buildings, which met the difficulty.

Dr. HARRIMAN. Mr. Chairman, I think there is no penalty imposed upon the city or town if they do not meet within six months of the passage

of this law and establish rules and regulations. I think the penalty in the law is fixed upon individual violations, the sum of fifty dollars. Now, in case a city or town will not adopt rules and regulations, what will be the position of the Board of Health under Article 6? It is by no means clear. I went to two lawyers for their opinions, and they did not agree, and I think Article 6 should be changed so we can know whether a Board of Health has power, in case a city or town does not adopt regulations, to proceed under this law with rules and regulations which they can enforce. The word "shall" there does not fix any penalty at all upon the cities or towns, therefore the Board of Health wants some protection, and the law should be changed so as to give them protection.

Mr. ABBOTT, of Andover. Mr. Chairman, I came here today, not to discuss, but to learn something, and the point that Dr. Davenport has brought up is one that I came to learn about. We have heard from the master plumbers and from gentlemen representing cities and large towns in regard to this law, but the bill as presented by the Legislature provides that towns over a certain number of inhabitants, and cities, shall appoint an Inspector of Plumbing. I represent the town of Andover, which has 7,000 inhabitants. We have not as yet done anything in regard to this matter. I brought it before our town solicitor and asked him in regard to the law. He said to me, "There is no penalty for the non-appointment of an inspector, and you had better wait until the next meeting of the board (that has been this meeting to-day) and see if you can learn something about it."

Dr. Davenport's idea in regard to the appointment of inspectors meets the conditions that we have in Andover. We have several tinsmiths who are so-called plumbers, that is, men who a few years ago sold stoves and tinware and who have attached to their signs, "Practical Plumbing," — "Tinplate Work, Stoves and Practical Plumbing." Now are we in towns of that sort to appoint one of those men, perhaps a man who could not do a piece of plumbing work? If there are but two men who advertise to do that kind of work in the town, we are obliged to employ a man and pay him a salary as inspector of plumbing, thereby using up some of the town's money.

I represent a town which, like a great many towns in the State of Massachusetts, has introduced water—from Haggett's Pond—and we have as pure water, I think, as there is in the State; but we must devise some way to get rid of that water. We have made a survey of the town with the idea of introducing sewers and also drainage; and being a member of the committee that has charge of the matter, I spent a large amount of time with the engineer in going over the town; and we would like also, if we get good sewers, to have the plumbing inspected; but whom shall we appoint as our inspector of plumbing?

When it comes to the town meeting, which will occur in March, as it has happened the last three years, there are certain individuals who live on the outskirts of the town whose great cry is, "Retrenchment in expenses." Our taxes are sixteen or seventeen dollars, and these people say, "We have got to cut down the expenses. We do not want any inspector of plumbing. The town has existed here for 250 years, and has had no diphtheria or typhoid fever. What is the use of it?"

Now, my idea is that the bill should be changed — I do not know how, as I came here to learn—in such a way that the town of Andover, and every town, can have an inspector of plumbing in some way, but how it shall be done, I do not know; whether we shall go to Lowell or Lawrence or Haverhill or Boston to get a man to come out there and inspect our plumbing is a question. There may be a good man in Andover, and I do not say there is not, but is he going to do work there and inspect the plumbing of the other two men to the detriment of their business, provided that should be his ideal, though I should hope it would not? That is one question that has come before us: whom shall we appoint, and whom shall we have on the examining board, and what shall be the examination requisite for a practical plumber? Those are questions which I hoped would be discussed here to-day. Of course in all your large cities you have men appointed to look after those things, but in towns of small size, particularly in the town of Andover, where we have Phillips Academy and Andover Academy in the centre of the town, bringing 900 students and teachers from all over the country, representing all classes and conditions of people, from the laboring man to the highest in the State,—those people and students we are bound to protect as well as we are able. They come from homes where the plumbing is perfect, so far as it can be, and they come to the town of Andover, go into boarding-houses, pay good round prices, and are they protected, so far as the sanitary measures of the town are concerned? We are willing to do all we can as a Board of Health, but so far as the bill is concerned in the town, it has been a question with us what we should do to follow the letter of the law, so far as we are able, and yet keep within the practical ideas of plumbing. That is a point that Dr. Davenport has brought out to some extent, and upon which I came here to-day especially to gain some knowledge. That is one point that does not seem to be covered by the bill. Of course, in cities there is no question about it, but in towns it is a question as to whom shall be appointed as that inspector of plumbing.

Mr. NORTON, of Beverly. Mr. Chairman, I would like to say in regard to the matter brought up by the gentleman from Natick,—I think he is gone now,—I am certain that in my town we took advantage of the law in that it provided no penalty, and appointed for our inspector of

plumbing, or continued our previous inspector of plumbing, the man who was inspector of buildings. He has done good work and seems to be a practical man, although not a practical plumber. Our death rate for 1893 was 15 1-2 a thousand, so that you can judge his inspection must have been pretty good.

The word "practical" has been used here a good deal, and a practical enforcement of the law in the smaller cities and towns, it seems to me, is rather difficult. The gentleman on my right speaks of having to come to Boston to get a man to act as inspector of plumbing because of their having only one or two plumbers there. Where there is only a small amount of inspecting work to be done, seems to me to present one of the greatest difficulties to be encountered under this present law.

Dr. DIKE, of Melrose. Mr. Chairman, I wanted to hear an answer given to Dr. Harriman's question regarding the penalty for a town's not complying with the provision of that Act. We have in Melrose a Board of Health that have compiled their by-laws, and we cannot get the town to accept them, therefore we are in a quandary, and I hoped to see that question settled to-day. If any one can give information on that point, I would like to hear it very much.

Dr. DAVENPORT. Mr. Chairman, in regard to a question raised about a town not being willing to pass regulations, I will say that in my town we had two heated town meetings, and they utterly refused to pass any regulations. The argument was that the town was 260 odd years old; they never had had any regulations, and they did not know that they wanted any regulations, and said they would not have any regulations. Well, that was summer before last, when the cholera scare was about. We thought ourselves that was a fit opportunity to act, because rumors of the cholera came to the Board of Health every now and then, otherwise there never would have been an opportunity to act; and we took advantage of the Statute which says that Boards of Health of towns shall make such regulations as they judge necessary for the public health and safety, and that whoever violates any such regulations shall forfeit a sum not exceeding one hundred dollars; and then we went on to say that, in the judgment of the Board of Health, the following regulations were necessary for the public health, and published a code of regulations. Some people were unwilling to obey it, and we had them brought before the court and the court upheld us. The burden of proof was upon the defence that these regulations were not necessary. The result is practically the same as if the town had done it.

Mr. EDWARD N. QUINN, of Waltham. Mr. Chairman, it seems to me that in discussing this plumbing law we have lost sight of the fact of the peculiar relations which exist between the preservation of the public health and the details of a law of this kind. As an Association we are formed

for the purpose of promoting the public health generally. The various details of the law do not concern us except in so much as they affect us. Now, rather than trust myself to a few casual remarks which I might make upon the occasion, I have jotted down a few notes upon a paper to which I trust you will listen.

* Mr. E. N. QUINN. Mr. Chairman and Gentlemen of the Massachusetts Association of Boards of Health:—

After hearing the different opinions presented by the speakers of the afternoon, I almost hesitate to ask a further consideration of the subject, for so much has been said, that, to the casual listener, there would scarcely seem to be anything more that could be urged as bearing upon the questions in discussion. So much time has already been consumed and the hour is growing so late that I see you are anxious to have done and leave for home; yet I fain would beg your indulgence for the opportunity of offering a few additional suggestions on that section of the committee's report, relating to inspectors of plumbing, before proceeding to vote upon its recommendations.

I shall confine my remarks, as far as possible, to the following argument, *i. e.*, that it is not for the best interests of public health to restrict inspectors of plumbing to practical plumbers.

Naturally in the course of the argument, frequent allusion may be made to plumbers and their work, and I desire to be understood, not as objecting to them as workmen, but as protesting against the law which would restrict the employment of inspectors of plumbing to one particular class. For the plumbers, indeed, I have much respect. My duties lead me among them daily. I have laid out, supervised and examined their work, and inspected hundreds of their jobs. I have talked with them, learned their different methods, and exchanged views with them on the theory and practice of plumbing. So that what I say is not from partial or biased motives, but from an intimate knowledge covering years of experience and observation.

These remarks, therefore, are from an unprejudiced point of view and based mainly upon the results of my own experience and personal investigations into the relations existing between unsanitary conditions and the dangers to health lurking in defective plumbing.

For years I have had unusual opportunity for observing the natural consequences of cause and effect as relating to the general principles of sanita-

* NOTE.—Mr. Edward N. Quinn is the Inspector of Plumbing in Waltham, Mass. The opportunity for practical experience in the inspection of plumbing work in that city for the past few years, has been unusual. Owing to the recent completion of the sewer system there, and the attitude of the Board of Health in forcing connections, the plumbing is being thoroughly overhauled and reconstructed. The regulations governing plumbing, while similar in many respects to those in force in other places, are a unique departure from the theory of so-called "back ventilation," advocated by so many authorities. The system has been highly spoken of by those who have examined it, and the plumbing work in Waltham is not surpassed by any other city or town in the State.

tion. Defects in drainage systems were carefully noted, and means for remedying them studied and applied. So I do not advance mere theoretical fancies or visionary thoughts, but speak from *practical* experience, notwithstanding what my "practical" friend on the left [Mr. Davlin] might say to the contrary. [Laughter.]

The scope of the subject is wide and deserving of most profound attention from every thinking mind; it is well calculated to awaken thought on matters which are of vital interest to all, and particularly to us as an association: for the question of home drainage is essentially one of health and life. Considered from a sanitary standpoint it is a most important phase of a subject which is occupying a great deal of attention in the present day among boards of health and others interested in sanitary reform.

The problem advanced by the philosopher centuries ago, of "pure air, pure water and pure soil" as necessary for the happiness of mankind, is still a mooted question. In the light of present knowledge it is of paramount importance to the health of the community that the good work which has been begun by our sanitary boards should be continued in a specific and systematic manner.

The importance of a close attention to even the minutest details of plumbing cannot be overestimated. We do not at all exaggerate the condition of things when we say the subject of sanitary house plumbing is a vital factor in securing immunity from many of the ills which our fathers taught us were the dispensation of a divine Providence.

This subject confronts us with the serious aspect of the prevention of disease and the preservation of health. The president of the National Association of Master Plumbers, which met in convention in Milwaukee last summer, incidentally said, that "the plumber held the life of the community in his hands." And this assertion has much truth in it.

While much has been written on the subject of infectious diseases, their cause, prevention, control and cure; and while earnest and unremitting attention has been bestowed upon this matter by boards of health, and much accomplished through their efforts, yet the importance of the application of sanitary principles to the plumbing side of the question has been recognized only in recent years. There are few scientific subjects of such importance about which so little is really generally known. The growth of house drainage as a system is comparatively new, and only very recently is the subject receiving the attention of popular interest. Very little, comparatively speaking, has yet been written on this phase of the subject, so that the source of information to the general public is somewhat limited. Yet the agitation of recent years is bringing the subject vividly before the public mind in a way to call for urgent consideration.

It might be a difficult matter to prove to your satisfaction that the evils

resulting from imperfect plumbing are as destructive of life as fire of buildings, yet the statement is no exaggeration. How many diseases are attributable to bad drainage it is impossible to determine. Read some of the reports of health officers and physicians throughout this country and Europe and you may then realize why so much importance is attached to the subject. It is a problem of such vital importance that it is commanding the attention of scientists throughout the world, and much has already been accomplished through their efforts.

This agitation has produced a revolution in plumbing practice all over the country, during the last dozen years or so. With the aid of advanced knowledge recent investigations have perfected the laws of sanitation and the conditions favorable to health so as to make them applicable to practical operation. And what is the consequence? Our boards of health are becoming thoroughly in touch with the spirit of advanced thought, and are adopting rules and regulations governing the practice of the work. And the results are apparent to all in the substitution of careful, scientific work for the slipshod and crude methods hitherto practised. George Preston Brown, one of the most prominent engineers of the West, says that in Chicago only as far back as 1881, "It would probably be the truth to say that not one house in a thousand has a perfect drainage and consequently is a healthy habitation;" and I have not much doubt that the same conditions existed here as many years ago.

Now I would propose a few pertinent questions; Who instigated these reforms? Who precipitated this changed condition of things? Was it the practical tradesman? Was it the plumber, either master or journeyman? Don't be impressed with any such delusion. To the professional man, the scientist and sanitary engineer, is due the credit of accomplishing this progress in matters relating to modern plumbing. This progress at first was retarded by the lack of knowledge shown by the workman in keeping pace with the times. He was so imprisoned by the prejudice of the past, that advance in real improvement was oftentimes slow.

There are few occupations in which the broad influence of a liberal education are more useful than to the plumber. In order to bring to his work an intelligent appreciation of the laws which underlie its principles, he should possess that grasp of theoretical subjects which would enable him to keep abreast with advanced knowledge. The rapid growth and development of sanitary science is opening up a field requiring special training and experience. It is only lately that the general principles of sanitation are being adapted to practical work. The so-called "practical" man who can discern in the complex conditions of theoretical and mechanical sanitation the solution of problems governing the vital principles of house drainage, is indeed rare: such a man is not the average "practical" plumber. Indeed, it

cannot be expected that the average workman should possess the breadth and scope of knowledge necessary to advanced work.

You can understand then, how, under the present conditions of modern life, the responsibility resting upon those in charge of the plumbing in the growing cities and towns of the country should be beyond that of the mere ability to accomplish a piece of mechanical work. Modern plumbing has become of too much importance to be entrusted to any but competent supervision. There is a training of a higher order than the most extended practical experience alone can supply, and that is the training which develops the powers of observation and judgment: a mental training, without which it is impossible to accurately interpret the conditions upon which first principles are based.

Now, Mr. Chairman and gentlemen, with reference to Sec. 5, Chap. 477, of the Acts of 1893, of the Massachusetts Legislature,* which requires that inspectors of plumbing shall be "practical plumbers." I desire to call your attention to a further consideration of this matter. Aside from the fact that it is open to the objection that it restricts the privileges which law and constitutional rights accord to every man, to a certain class comprehended under the term "practical plumbers," let us consider if the public good is benefited thereby; that is the real end to be gained from all legislation; otherwise it is a grievous mistake added to the injustice of fostering class legislation. Aside from the construction which possibly the term "practical plumbers," in connection with this subject, might admit of, the qualifications necessary to an inspector of plumbing are more exacting than can be found, presumably, in the average practical workman.

The word "practical" is a much abused term, and has been used to cover a multitude of sins. There are a great many so-called "practical" men who may possess a special ability in the handling of tools, but who, unfortunately, can do little with their heads. The man who can accomplish a skilful plumbing job is not necessarily the one who can best supervise the construction of the work. It must be acknowledged that an essential requirement in securing all of the advantages of good plumbing requires constant, careful and intelligent supervision as absolutely necessary for the best interests of health. It is not enough that a man should be merely a practical workman; he should be thoroughly conversant with all the principles underlying his work.

*NOTE.—Sec. 5, Chap. 477, ACTS OF 1893.

"The board of health or inspector of buildings of each city and town mentioned in section three of this act, shall, within three months from the passage of this act, appoint one or more inspectors of plumbing, who shall be practical plumbers, and who shall hold office until removed by said board or inspector for cause which must be shown. The compensation of such inspectors shall be determined by the board or inspector appointing them, and be paid from the treasury of their respective cities or towns. Said inspectors shall inspect all plumbing work for which permits are hereafter granted within their respective jurisdictions, in process of construction, alteration or repair; and shall report to said board or inspector all violations of any law, ordinance or by-law relating to plumbing work, and also perform such other appropriate duties as may be required."

As I have before intimated, the rapid developments of modern sanitary science are the results of the labor of scientists and not of "practical" plumbers.

The work done to-day is far in advance of that of a dozen or so years ago. The methods of that time show frightful examples of unsanitary devices and curiously outrageous work. The plumber, not realizing the vital importance of his work, might have continued in the old ruts of long-established custom to this day, if his errors were not rectified by others. With all due respect to the plumber, in many instances he has been opposed to advance in his line of work. He has made very little effort to correct abuses or live up to the higher ideals and precepts of sanitary reform. How many of our "practical" plumbers, do you suppose, comprehend the intimate relations which exist between defective plumbing and the prevalence of preventable disease? How many of them understand the principle of the generation of "sewer gas" and its destructive influence upon the hæmoglobin of the red blood corpuscles? How many of them even feel themselves competent to pass judgment upon all the details of sanitary arrangements which affect their work?

Even in the labor of good practical workmen, generally produced by anxiety to do superior work, defects of a very serious character often occur, showing a lack of understanding in the local conditions which should influence the work, and consequently of the main principles upon which the whole system of sanitation is founded. There is a lack of ability for specific application. "A little knowledge is a dangerous thing," is often forcibly illustrated in such cases.

It might be interesting here to relate my own experience in enumerating all the defects of a grave character I have seen in drainage systems, the flagrant cases of gross stupidity I have found, the jobs of reckless botching I have taken out, the scandalous carelessness and criminal dishonesty, the indifference and ignorance on the part of the workmen apparent on all sides; but it would not be possible, in the course of one of our sittings, to commence to suggest even all the dangers which menace health that I have found in defective drainage. What I say are facts patent to all who have had occasion to inquire into the subject and investigate for themselves.

There is a gentleman here present who can affirm to the criminally outrageous piece of work I took out of his own dwelling almost under the protest of the owner. His bathroom was actually converted into a retort to collect, preserve and distribute all the foul gases generated in a large cess-pool containing the collections of many years' sewerage from a large household. But this work was done originally by a first-class "practical" plumber.

I could cite hundreds of similar cases if time would permit. And then the plumber has the assurance to tell you that the inspection of plumbing work

should be entrusted to no other hands than his! Only a plumber is competent to inspect the work of plumbers! I refrain from giving expression to my own feelings in explaining my meaning. What does S. Stephen Hellyer, of England, say about "practical plumbers," himself a practical man, I believe, of extended experience, and a sanitarian of no mean order. Before a parliamentary committee in London, a few years ago, he gave much sensational and damaging testimony concerning "practical plumbers." His exact words I do not recall at this moment, but think they are quoted in one of the reports of the then National Board of Health of this country. He accuses the plumbers, in no gentle language, of being the cause of much sickness and death of the United Kingdom by their hellish work!

Do any of you gentlemen here present question these assertions? Possibly you have had your own experience in past years. If you doubt me call in a plumber to your own house and learn for yourself. Only suggest to him that you need his services and he makes your emergency his harvest. [Laughter.] Suggest to him the need of a piece of pipe here, a new trap or fixture there, and he is perfectly willing to follow your suggestions: call him in to-morrow and tell him you are not satisfied with the way in which things work and he is perfectly willing to take them all out again for you, "for a consideration," of course. [Laughter.] Is this not true? Here, gentlemen, is the situation in a nutshell. The gentleman from Somerville [Mr. Davlin] well understands it; he has been all through it himself, doubtless, "for a consideration." [Laughter.] If that "consideration" were not involved they would not now trouble themselves about the character of work or the qualifications of the inspector. They would not be so eager to keep the work within their own control. They fear that "Othello's occupation" may be interfered with if others "get onto them." [Laughter.]

Now ask any plumber you happen to know if his profits for the last ten years have been at all commensurate with those of the previous decade. They have not. And why? Because the requirements of the rules governing plumbing, enforced by our local sanitary boards, have reduced the possibility of undue gain by requiring the plumber to conform to the laws; and consequently his profits have decreased accordingly. The various make-shifts resorted to at the time by which the public was humbugged cannot now be successfully practised. And every intelligent and honest person who has given the subject any attention knows this. I know of firms which have been forced out of the business since the advent of rigid supervision of plumbing work.

But I am digressing somewhat. In what then, should an inspector of plumbing's qualifications consist? They should consist, first — [Here the chairman interrupted to read a dispatch from an absent member in Florida: "*Corbett knocked Mitchell out in three rounds!*" (continued laughter and

applause)] — an inspector's qualifications should consist, first, in that fundamental education necessary to success in any line of work; secondly, in a thorough grounding in the physical laws upon which the whole system of sanitary science is based. He should possess, in addition to any practical knowledge he may have, a theoretical knowledge of the elements which enter to make up this system, and I need not tell you that few of the average workmen possess this experience.

But it may be urged that experience depends upon practical skill. This, in a measure, is true. I do not underrate the value of experience or of knowledge gained in practical operations. It would be well if much practical knowledge were possessed, the more the better. That is good as far as it goes; experience is necessary — but not necessarily that experience which would only require a man to be able to "wipe a joint" or bend a piece of pipe successfully. Experience of a wider and larger and more comprehensive nature should be possessed: the experience resulting from a knowledge of the relations existing between the physical laws and the complex conditions which frequently arise in every-day plumbing work. Experience in the practical application of such knowledge is of far more value to the inspector than the possession of the mere ability of the average workman. It is of more importance to understand the relation between certain diseases and their preventable causes; for it is only reasonable to suppose that the possession of such knowledge on the part of the inspector would very soon show its influence in the character of the practical work done under him.

It is a fact that the imperfectly educated man possesses in general but crude powers of observation, and especially of the natural characteristics of the physical laws. By this use of the word "educated" I do not necessarily mean the knowledge gained in schools or academies of learning, but the ability to draw out or discern the natural consequences of cause and effect, the power to control and utilize all the factors of the physical elements which lend themselves to the correct solution of problems which are continually arising in practical work.

This, indeed, might be the purpose of all education, but it is particularly true of the education absolutely necessary to engage in any department of sanitary work. Such an education can be obtained only by thorough mental training. Again, it is urged that a "practical" man is best qualified to inspect the work of practical workmen, possessing, as he does, their stock in trade and knowing the old-time tricks of the craft. This is not altogether true; even then it is at times difficult to prevent intentional frauds on the part of an unscrupulous workman. But, granting this, is nothing more necessary than the mere casual inspection of manual labor? This is only of secondary importance, for any practical workman could accomplish this much.

Upon what does the plumbing system of a place depend? In a great measure upon the ability of the local inspector, rather than upon any rules governing it. Examine the general system of plumbing in any of our cities and towns and you can reasonably guess at the qualifications of the inspector. He it is who generally has the entire control of the work. Ofttimes the making of the rules and regulations, even, as well as the interpretation and adaptation of them to local conditions, depends upon him. The department in whose employ he works does not pretend to dictate to him, owing, indeed, often to its own lack of knowledge in the premises. And it cannot be expected that the ordinary man, unless he possesses special training — which is seldom the case — should be familiar with the difficult problems of house drainage which frequently arise. These difficulties are left to the inspector for settlement.

The *personnel* of our Boards of Health in the cities and towns of the State, in whose department the work is generally left, is ordinarily made up of a physician and a few laymen who do not presume to comprehend this part of the work; so that the whole supervision of the work falls to the inspector. How many of you gentlemen here present, members of the different Boards of Health throughout the State, perfectly understand the sanitary conditions of your own homes, even in regard to the plumbing, or are certain that the existing conditions are free from dangers to health? Yet the plumber tells you that he, and he only, should have charge of this work! Much responsibility, therefore, rests upon the inspector; for, in a measure, he "holds the health of the community in his hands." The time is coming when such an officer will be required to possess such qualifications. He may be a "practical plumber," indeed, but not altogether in the sense of the average practical man of trade. It will be seen, therefore, that the office of inspector of plumbing is a highly important one and should be filled by a responsible official.

Again, gentlemen, in the interpretation of the term "practical plumber," as used in the Statute in the section referred to, much difference of opinion has been expressed. In my own city, the solicitor's opinion, which you have heard read by Judge Smith, has rendered the term to mean a plumber who can do any ordinary job in plumbing practice; and further, under the meaning of the Statute, that the inspector of plumbing should be a person possessing such qualification. But I cannot understand that the term can be defined from a legal point of view. In this country there is no system of apprenticeship established by law by which the meaning of the term could be defined; so that it becomes a matter of *opinion* and not of *law* as to its explanation.

Since this agitation over the matter, many of the plumbers in Waltham are in a dilemma to know just how they stand in the matter. Several of them can do good plumbing work, but it is a question whether they would come under the generic term of "plumber" as thus defined. [Laughter.]

In my researches in this matter — the exact meaning of the term “practical,” I mean—I have consulted many sources of opinion, and I have yet to obtain any definite information. From the cursory views of the journeyman to the dogmatic opinion of the master plumber: from the judgment of the sanitary engineer and man of science to the opinion of the mechanic,—I have wavered: and the only satisfaction I have found, outside of my own experience, was in Blackstone, when I learned that the most rational method of interpreting the will of the law in a given case where there is a question of doubt, is by exploring the intentions which framed the law.

Now let us enquire into the conditions which made plumbing laws necessary. In a nutshell, *i. e.*, the slipshod and crooked methods of doing plumbing work which have prevailed for many years and for which the plumbers themselves are responsible. The natural result of this bad workmanship materialized into a public realization of the danger, and legislation became absolutely necessary to protect humanity from a great peril threatening the foundation of its health. The law, gentlemen, protects the plumbers against themselves as well as the community against them. [Laughter.]

The subject of sanitary science being yet in its infancy, requires the progressive and not the retarding element to become necessary to man's welfare. So that, as I am informed, the New York Court of Appeals has decided, that as all laws are made for the benefit and not for the injury of the community, we must prefer the scientist to the practical plumber, so-called. This decision further adds—I depend upon a friend for the quotation—that “a practical plumber is classified under the head of unskilled labor, but occasionally he may be classified as skilled labor. [Laughter.]”

Now what would be your interpretation under the conditions? I know of no better opinion than that of J. Pickering Putnam, one of the most prominent sanitary engineers of New England, and an acknowledged expert in sanitary matters. In response to my letter of enquiry he replies: “I hold the expression ‘practical plumber,’ in this connection of a plumbing inspector, as one who has a thorough knowledge of the chemical and physical laws underlying scientific plumbing. Such a man is the only one who is fitted to direct the workman in the execution of practical plumbing. A scientific knowledge of hydraulics, pneumatics and chemical physics, and a thorough knowledge of the general principles underlying plumbing work is infinitely more important to the inspector of plumbing than any special manual dexterity in the handling of plumbers’ tools.”

I take the ground that the public good demands the best possible service in conserving its interests in so vital a matter as that which re-

lates to the preservation of the public health, and that the control of plumbing work should be in the hands of those where it properly belongs, those who are capable of investigation upon a scientific basis. Here is the only proper course to be pursued in dealing with the difficulty.

William Paul Gerard, consulting engineer for New York city, another high authority in this country, says in connection with the interpretation of this term: "It is not necessary that an inspector of plumbing should be a 'practical plumber,' understanding the term to mean a person who has served an apprenticeship in or who has carried on the trade of plumbing."

George Preston Brown, before quoted, says: "The supervision of the construction of house drainage should be entrusted to a sanitary engineer, no less than the construction of a house itself to an architect."

All these men, and many others that might be mentioned, are well-known experts in their profession, and to them are due many of the improvements in modern sanitary plumbing in this country.

I will not take up your time further, gentlemen, in discussing this question. What I have said is simply the result of honest conviction and based upon actual experience in this line of work. It would be impossible to cover the whole subject or to present all its salient features without going further into detail than your time would permit. There are so many things to be said that in these brief remarks it is not possible to consider all the features which might require attention.

In these cursory observations I have endeavored to offer a few suggestions for your consideration. They do but scant justice, however, to a subject of so much importance. If they have served to awaken thought and to create effectual recognition in this matter, they have accomplished their object.

To close, my point is this: that the interests of public health demand the very best talent that modern science can supply in keeping pace with the natural growth of the times. Do not place any restraint then, I pray you, upon this progress by recognizing any but the best methods. Cause the Statute to be changed so that Boards of Health may have some voice in the selection of their inspectors; give them the power to choose them whence they will, under the limitation, however, of suitable qualification only. Raise the standard of qualification, if necessary, but insist upon ability in the inspector. Change the Statute, therefore, by throwing open the position to all competitors, to any others as well as to the practical plumber. Make his chances of success depend upon his ability to pass the necessary examination and not merely upon his skill as a manual workman. [Applause.]

Dr. CHAS. H. MORROW. Mr. Chairman, there is one point in this law

which nobody seems to have taken much note of, and that is, after you have your men all examined, who has the appointing power? I think the law says, although I have not the law here, that it shall be either the board of health or the inspector of buildings. This has already led to considerable difficulty in some places. I know a journeyman plumber who came to me and desired some points in regard to this plumbing law, and I told him I did not know anything about it, but I should advise him to go into the examination in another city; and he went into the examination and got the highest per cent., and he thought certainly he was to have the appointment, but he found out that a difficulty arose as to who had the appointing power, whether the board of health or the inspector of buildings, and that naturally has continued until the present time, and the man has not the position. I think that difficulty can be remedied very easily, and I think it should be remedied.

DR. DAVENPORT. Mr. Chairman, there is another point which has arisen. My board had an examination of several men who had applied for the position of master plumber. We had to determine in our own minds what the examination should be. We had twenty questions written on topics pertaining to plumbing, including plans and methods of plumbing, some of which were correctly constructed and some were not. We requested the candidates to examine, criticise and point out the errors where they existed, and it was quite curious to see how they did. We also required that they should submit a piece of actual plumbing work which should be done in the presence of our inspector and which was to be satisfactory, before the candidate received his license. No one person who applied for the master plumbership reached the standard upon which we had determined, and the question was, what shall we do about it? My proposition was, that not having reached the standard which we had set for the master plumbers, but having attained to that which we had set for journeymen plumbers, although the man had applied for the master plumbership, we determined we would grant only a journeyman's license. That is a practical question which I and others have had occasion to consider, and I should like to have the advantage of other opinions about it.

HON. E. IRVING SMITH. Mr. Chairman, there have been several questions asked which I feel, for one, hardly competent to answer, and yet I am willing to furnish what light I can upon them. It was asked, in the first place, what penalties were attached to this plumbing law. So far as the boards of health themselves are concerned, and so far as the city officials generally are concerned who are affected by that law, there is no penalty whatever. It is left to them simply to enforce that law as a matter of duty, and I think it is an unusual thing, except in certain cases where it is absolutely necessary that a law should be enforced, that a penalty should be

attached for a mere failure of duty. It is a malfeasance in office which would be punished, if at all, by removal by the proper authorities; either by the people, if they elect, or by the proper authorities if appointed by the authority of the city; therefore if a board of health neglects to appoint an inspector of plumbing, or if a city neglects to make rules and laws, they are simply neglecting their duty, and no penalty is provided for any such breach. There are penalties, however, in this Statute, and those penalties bear directly upon the plumbers. The last clause but one provides that any plumber who violates any of the provisions of the Act shall be subject to a fine not exceeding fifty dollars, and there is a direct and comprehensive remedy against any plumber who does anything wrong in view of this law.

The next question was in reference to the power of the board of health to make rules and regulations. The Statutes provide that a city or town shall by ordinance or by-law make such rules and regulations, and there is no doubt but what such rules and regulations may be enforced. But the question whether the board of health can do anything in addition is the one that we have had distinctly presented to us. That question, I would suggest, might be answered in this way: that the Statute there provides that plumbing work shall be done subject to the approval of the board of health. That certainly, it seems to me, gives the board of health an opportunity to make such additional rules as they see fit, rules additional to any ordinance that may be passed by the city. Apart from that and resting on a different ground, we fall back upon the general proposition that boards of health have jurisdiction in sanitary matters, and may make such rules as are proper in that connection. I admit that there does now seem to me to be some doubt as to how far the board of health can go, and I did not appreciate that doubt when your report was drafted. That certainly ought to be considered.

The next question was asked by a gentleman whether he could go outside of his own town to appoint an inspector of plumbing. That matter is controlled largely by the civil service rules. An inspector of plumbing must be appointed subject to those rules, and I understand that the candidate must come from the town or city in which he is to be appointed. The civil service examiners will examine only such an applicant, but if no applicant who appears before the civil service examiners passes a satisfactory examination and who is suitable for the place, then they send a certificate to the local appointing power which authorizes them to appoint anybody, subject to a non-competitive examination, and that is the way I understand that matter stands.

Then, in conclusion, I would say that it seems to me that the Association ought to express some opinion as to the main points of the controversy that we have before us. The principal question is: Do we want this provision in the Statute at all requiring the inspector of plumbing to be a practi-

cal plumber? That is a plain and distinct issue. There are other connections in the Statute in which the words "practical plumber" are used. For instance, one of the members of the board of examiners must be a practical plumber. With that, I understand, there is no quarrel, except so far as there is some doubt about what the words "practical plumber" mean, but the real question is: Must an inspector of plumbing be a practical plumber? And that is the thing upon which the Association is bound by the report of the committee to express some opinion.

There were other questions, perhaps of less importance, but still of importance. The most prominent was whether there is any necessity of a central authority such as the State Board of Health or the State Board of Civil Service Examiners, who should have some control or some advisory power over local boards of examiners, who are to examine applicants for licenses for plumbing, and the suggestions that the committee made in that respect were what they believed to be wise, so far as they had considered the subject. I do not know as it is usual in a meeting like this to ask for a direct expression of opinion, but I certainly would like for myself to get such an expression: whether this Association approves, in the first place, of striking out from the Statute the requirement that the inspector of plumbing must be a practical plumber; and, in the next place, whether it is advisable that there should be some central authority that could maintain a uniform standard of excellence throughout the State with reference to plumbers who apply for licenses.

THE CHAIRMAN. Is the Association now prepared to come to a vote upon the matters which Judge Smith suggests? If so, I would put the first motion, and then upon the question as to the (perhaps Judge Smith can state it more accurately than I can) necessity of a practical plumber serving as inspector. I would ask Judge Smith to put that in such a form that we can more clearly vote upon its approval.

HON. E. IRVING SMITH. I will put it in this form: I move that it is the sense of this Association that the words "practical plumber" should be stricken out of the Statutes so far as they relate to the qualifications of the inspector of plumbing to be appointed under the Statute. [The motion was seconded.]

MR. MCCARTNEY. Mr. Chairman, I would move as an amendment that the words "practical plumber" be stricken out, and the following words be inserted in their stead: "The person appointed shall pass a civil service examination designed to test his skill in practical plumbing, house drainage and plumbing of ventilation."

MR. SMITH. Mr. Chairman, the committee did make a recommendation in regard to the kind of examination this inspector should be required to pass; but I was afraid we should get into a discussion on that matter that

would involve the main point, and I intended to present that question later, if it was the sense of the Association that the words "practical plumber" are not advisable.

The CHAIRMAN. Do you care to press your amendment now or later?

Mr. McCARTNEY. Later. I won't press it now. [The motion of Judge Smith was then adopted.]

Mr. SMITH. Mr. Chairman, I now move that it is the sense of the Association that it be provided in the Statute relating to plumbing that any person before appointment as inspector of plumbing shall pass a civil service examination designed to test his skill and technical knowledge in plumbing work, as related to house drainage, plumbing and ventilation. I have omitted from that the word "practical" in order to see whether anybody thinks it should be necessary.

Mr. QUINN. Mr. Chairman, I rise to second Judge Smith's motion for this reason: Mr. McCartney, my friend from Worcester, is anxious to have the word "practical" put in. He wants to exclude everybody but plumbers. Now, let him be charitable and give the others a chance. We do not care to exclude the plumbers. We desire to give them a chance, but let any other person have a chance as well as the plumbers. I do not think it necessary that an inspector of plumbing should be able to "wipe a joint." That ability could be acquired by a week's practice. It is difficult to say just what a practical plumber is, because when the trouble came up about practical plumbers I purchased a kit of tools and worked night and day until I could wipe a joint. I do not know whether I am a practical plumber or not, but I hope Judge Smith's motion will be carried. Include practical plumbers, but do not exclude others.

Dr. MORROW. Mr. Chairman, I am in favor of the words "practical plumber." If a man wants to be a practical plumber, he can become such in a year or so.

Mr. McCARTNEY. Mr. Chairman, I insist upon the words "practical plumbing" because I do not think they will exempt any man who chooses to stand an examination. The Civil Service Commission will determine what qualifications are necessary, therefore I move as an amendment to the motion that the words "practical plumbing" be inserted instead of "plumbing;" that is, that the motion shall read in its entirety, "Any person before appointment as inspector of plumbing shall pass a civil service examination designed to test his skill in practical plumbing, sanitary drainage and plumbing ventilation."

The amendment was seconded by Dr. Morrow.

Mr. HICKS. Mr. Chairman, I hope that will pass, because the words "practical plumber" are hard to define. The Courts have said many times when the law does not define a term, "We will turn to the leading diction-

aries to see what the meaning of the word is;" and many of our friends here have been to the dictionary, and they do not yet agree as to what the meaning of the words is. We are getting into difficulty, and there is no way out of it until the law defines the term, and if the motion prevails as offered by Judge Smith, I think it won't shut out a practical plumber, and it won't shut out any competent person. I hope that the motion will prevail.

Mr. NORTON. The gentlemen who preceded me said just what I wanted to say. I believe that the word "practical" should be left out. I believe that ability to wipe a joint should not be a qualification for an inspector of plumbing, and it seems to me if that amendment prevails the question will be brought right round where the law now is.

Mr. CHARLES E. DAVIS, Jr. Mr. Chairman, Dr. Farnham of Cambridge was called away, and left in my hands this definition of the words "practical plumber," which may be interesting at this point. This information has been acquired from the Century Dictionary:

"Practical. Educated by practice or experience.

"Plumber. One who works in lead; especially one who fits lead pipes and other apparatus for the conveyance of gas and water, covers the roofs of buildings with sheets of lead, etc.

"Plumbing. The art of working and casting in lead (also, by extension in other metals put to similar uses), and applying it to various purposes connected with buildings, as in roofs, windows, pipes, etc.

"Practical plumber. One educated by practice in the fitting of lead and other metal pipes and other apparatus for the conveyance of gas, water, etc."

Dr. DAVENPORT. Mr. Chairman, I would suggest that the difficulty might be removed in this way: that instead of the words "practical plumber," it should be a person who had passed an examination before the Civil Service Commission as one competent, etc., whatever the rest of the phrase is. Of course, that would leave it entirely in the hands of the Civil Service Commission to satisfy themselves.

Dr. THOMAS, of Quincy. It strikes me, Mr. Chairman, that what the gentleman has said is just the thing, because as the word "practical" has been put here to-day, we throw out men who are competent. I know one man, personally, who does not follow the trade as a plumber at present, and has not for years, but there is nothing that I know of in the plumbing line but what he can do, for I know from some jobs that he has done in our place. He is a practical man, what we might call an all-round man, a first-class machinist, and at the present time is following the trade of a machinist. He is a first-class carpenter as well. He is somewhat of a chemist. I have had long talks with him on such things as the action of air or gas, in the past few years; so it seems to me that this word "practical" will perhaps throw out valuable men for these positions.

Mr. NEWHALL, of Salem. I hope the word "practical" will be stricken out of the Statute, if possible. We have in Salem a man who made a very good inspector of plumbing. He is a sanitary engineer, and under his direction has been done some of the best plumbing in Salem. If this word "practical" is retained, it might exclude him, and there is not a man in Salem more fitted for that position than he.

Mr. QUINN. Mr. Chairman, just one word more. I trust this amendment will not prevail. As the last gentleman said, it will shut out such men as Mr. Bowditch, Colonel Waring of Newport, —— & Brown of Washington, Philbrick of Boston and Brown of New York, and dozens of others you might mention, men who instituted this reform in plumbing and ventilation; you shut out all these men who were the prime movers in this matter. Give them a chance. You do not shut out practical plumbers by omitting the word "practical." They have the same opportunity as the rest of us.

The amendment offered by Mr. McCartney was then voted upon and lost, and the motion as offered by Mr. Smith was adopted.

Mr. SMITH. Mr. Chairman, I offer a motion that it is the sense of this Association that the State Board of Health have the power to advise local boards of examiners of plumbers with reference to examinations, and that local boards be required to submit their examination papers to the State Board of Health for approval before they are actually used.

The CHAIRMAN. I wish to ask the privilege of this Association of saying a few words from this place. I am apparently the only member of the State Board of Health present. I think that provision is entirely out of place, for the reason that the somewhat infrequent meetings of the State Board would make it difficult to get the timely expressions of opinion that would be necessary. The Civil Service Board is a salaried board, and they can employ and do employ an expert to give an opinion. I think the State Board of Health would be an exceedingly improper board to consider the matter, but I think the Civil Service Commission would be the proper board to consider it.

Mr. SMITH. Mr. Chairman, I rather expected that protest from the State Board, and in view of that I will withdraw the motion to a certain extent. I suggest that the words "Civil Service Commission" be used instead of "State Board of Health," so that the motion will be that local boards of examiners of plumbers (this has nothing to do with plumbing inspectors) — that local boards of examiners of plumbers shall be required to submit their examination papers for approval to the State Civil Service Commission before the papers are actually used in the examination, and that the State Civil Service Commission shall have advisory powers over local examining boards. The object of this motion is to get some uniformity in the standard of excellence required in the examination of plumb-

ers, and I repeat that it has nothing to do with the inspectors of plumbing, but it has to do with the plumbers themselves who apply for examination.

Dr. Davenport suggested that this procedure might involve a difficulty, as it might require a frequent preparation of papers to be submitted for approval, and if there should be one authorized set of papers, they could be reported to new candidates.

Another gentleman also thought there were difficulties in the way of accomplishing this, and thought it entirely likely that some board of examiners, even if they had examination papers, might substitute some other form of examination. He thought some uniform system was desirable, and suggested that a general convention of the boards of examiners of the State might be held to adopt some such system, but he did not think the result could be accomplished in the way proposed.

Mr. McCARTNEY. Mr. Chairman, this matter of enforcing the law I think is all-important: and, I think, as has been suggested, that there should be a central authority for the proper enforcement of the same. That we have not secured by our new law, and I think the law should impose upon the State Board of Health the duty of carrying out this law, and then we shall have attained a step in the right direction. Give them power to employ whatever service is necessary for the just carrying out and enforcement of the law. I think that the examination might be left in their hands too, giving them authority to employ whatever service is necessary in order to carry out this part of the law. Let them employ a man to make the standard of examination, and, if necessary, to go about from place to place to supervise the examination. That would be my idea of an amendment to the law. I think it will be a step in the right direction if we do get an amendment such as that, which would avoid all these little difficulties which are constantly arising as to the interpretation of the law. It would place in their hands the responsibility of interpreting the law, and if we had any complaint to make, we would know where to make it. Therefore I think that an amendment such as I expressed would be a very suitable thing indeed.

The CHAIRMAN. Will you put your amendment in writing so that we can act upon it?

Mr. McCARTNEY. Well, I would prefer to leave it open to the members for discussion first. I rather make it as a suggestion, in the first place.

Dr. MORROW. Mr. Chairman, this system which has just been suggested is the same as that carried on under the Civil Service Commission. They have a chief examiner, Mr. Sherwin, and he practically oversees the matter, sees that the work is carried on by the local board. If this idea, which Mr. McCartney suggests, were carried out, it would be on the same plan as the other civil service examinations, with the exception that Mr. Sherwin not being a plumber, there would have to be, perhaps, a man ap-

pointed who could travel over the State and supervise the examinations and see that the qualifications required were uniform.

A gentleman moved that the matter be laid over to the next meeting.

Mr. SMITH. As the matter has not received that attention and discussion which the importance of the subject demands, I think that matter should be tabled, and I move that that motion be tabled,—simply this motion.

The CHAIRMAN. Will you withdraw it or simply move that it be tabled?

Mr. SMITH. I will withdraw it.

Dr. THOMAS. Mr. Chairman, it seems to me this should be formulated in some way to come before the Legislature before February 1st. I think the committee which has made this report is perfectly competent to finish this matter and get it before the legislative committee. I move that this committee that has reported on this matter have the whole charge of presenting to the proper legislative committee what this Association desires, as has been represented in the different suggestions.

The motion was seconded.

The CHAIRMAN. It is moved that this matter be recommitted to the committee reporting it, with full power to present their views on the subject to the Legislature, and ask legislation in accordance therewith, with the understanding, of course, that the committee will act under the instructions already expressed in the first two votes.

Mr. SMITH. There is this difficulty, Mr. Chairman, that if any legislation is to be asked for in regard to this matter, the subject should be covered as well as it can be at the time any bill or amendment is presented.

The CHAIRMAN. Certainly.

Mr. SMITH. And that is the difficulty in regard to this case. Now, we are pretty clear on all the main issues except this one that has last come up for discussion. It has not received the attention that it should have received from the Association because of the press of other matters. Now, it seems to me that it is more a question of practicability than anything else. We are looking for some practical way to accomplish what, I believe, we all think is a good object, and I therefore would suggest that this committee, if it finds any practical suggestion which it can make to the Legislature upon this point, should do so.

The CHAIRMAN. That I understood was the purport of Dr. Thomas' motion.

Mr. SMITH. On this other point, as to the advisability of there being some central power, we have not had much discussion, so that if the motion means that the committee can go ahead and ask for legislation in that respect before the time expires to introduce new business into the Legislature, I think the motion ought to be carried.

The CHAIRMAN. I understood that to be Dr. Thomas' motion.

The motion was then adopted. It was also voted that Dr. Davenport and Mr. Hicks be added to the committee.

The CHAIRMAN. There is one question that Dr. Norton has asked me to submit to the Association: possibly it can be answered at once by some gentleman: who shall enforce the law in relation to vaccination of school children,—the school board or the board of health? If there is any representative of a board of health which has had any actual experience in that matter, I would like to hear from him.

Mr. HICKS. I think the board of health has nothing to do with that. It is a matter which in Boston is in the hands of the School Board.

Mr. SMITH. May I correct an apparent error in a statement of mine?

The CHAIRMAN. Certainly.

Mr. SMITH. In answering the question as to whether an inspector of plumbing must be appointed from the city which appoints him, I had assumed that the question related to cities only; but in the case of towns I understand that the civil service law does not apply, that the requirement that an appointee must be a resident of the city in which he is appointed does not apply to such a case at all, and therefore it seems to me that the appointee might be from any quarter. I merely wanted to say that so that I should not be misunderstood.

The meeting then adjourned.

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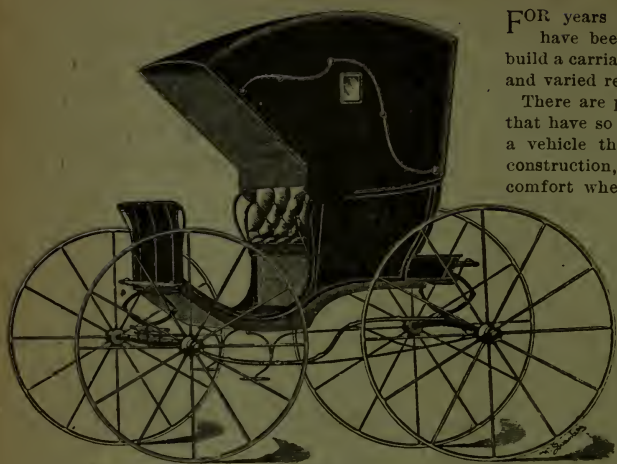
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NEW BEDFORD.

Thomas W. Cook.

Nathaniel Hathaway.

Wm. N. Swift, M. D.

Louis H. Richardson.

NEWBURYPORT.

Ernest Henry Noyes, M. D.

NEWTON.

W. S. French.

George P. Staples.

NEWTON LOWER FALLS.

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PROVIDENCE, R. I.

C. V. Chapin, M. D.

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QUINCY.

B. F. Thomas.

SPRINGFIELD.

W. H. Chapin, M. D.

James Kimball.

SALEM.

Daniel J. O'Brien.

Peter J. McNiff.

A. F. Newhall.

J. E. Entwisle.

Raymond L. Newcomb.

W. H. Fullam.

Philip Little.

G. A. G. Stickney.

W. H. Gove.

Jesse Robbins.

TAUNTON.

F. C. Walker, M. D.

William Y. Fox, M. D.

Charles H. Macomber.

WAKEFIELD.

S. W. Abbott, M. D., State B. of H.

WALTHAM.

J. J. Desmond.

N. D. Johnson, M. D.

M. H. Lynch.

W. N. Clifford.

E. R. Cutler, M. D.

Edward N. Quinn.

E. Irving Smith.

E. H. Brower.

Frank A. Foster, M. D.

WARE.

W. W. Miner, M. D.

WARREN.

J. W. Hastings, M. D.

WATERTOWN.

E. F. Porter.

P. J. Connealy.

WESTON.

F. W. Jackson, M. D.

Warren Hastings.

Brenton H. Dickson, Jr.

Marcus M. Fiske.

WORCESTER.

Lemuel F. Woodward, M. D.

James C. Coffey.

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John F. McCartney.

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MASSACHUSETTS ASSOCIATION OF BOARDS OF HEALTH.

Organized 1890.

[This Association as a body is not responsible for statements or opinions of any of its members.]

VOL. IV.

APRIL, 1894.

No. 2.

QUARTERLY MEETING.

THE Massachusetts Association of Boards of Health held its regular meeting at the Parker House, Boston, on the afternoon of Thursday, April 26, 1894. The meeting was called to order by the President, Dr. Henry P. Walcott, who stated that the reading of the records of the last meeting would have to be dispensed with, owing to the absence of the Secretary.

On motion of Dr. S. H. Durgin, Dr. Farnham, of Cambridge, was appointed Secretary *pro tem*.

THE PRESIDENT. The Executive Committee have to report to you the following names for membership in the Association: Dr. W. P. Bowers, of Clinton; Dr. J. A. Douglass, Dr. J. A. Fitz-Hugh and Mr. H. Cooper, of Amesbury; Dr. E. L. Warren, of Melrose; Mr. Edmund M. Parker and Charles Harris, of Cambridge.

The above named gentlemen were elected members of the Association.

THE PRESIDENT. The Committee also recommend to the Association for action at this time, the following resolution:

"Whereas, an amendment is now before the General Court of Massachusetts exempting all children from vaccination upon presentation of a certificate of any reputable physician that they are not in condition to submit to it, therefore—

"Be it resolved, that the Massachusetts Association of Boards of Health considers that this amendment will largely nullify the objects of the bill, and will obstruct the efforts of boards of health in enforcing vaccination, and that it believes the amendment should not pass."

In explanation of that, it should be said, as many of you probably know, that an amendment to the vaccination law has been introduced, by which any person can present in behalf of a child, a statement from any physician

whatever, stating that this child is not a proper subject for vaccination, and under that certificate the child at once enters the school, notwithstanding the present law that makes vaccination necessary. The Executive Committee feel that the influence of this Association should be thrown into the scale, if possible, to prevent this, and they therefore recommend this Association to adopt the resolution which I have read to you. Is there anything to be said about it?

Dr. DURGIN. This resolution is offered, I presume, for the reason that this subject is being discussed in the State Senate, and may be acted upon this afternoon, having been acted upon favorably in the House, and if the resolution meets the views of the Association, that expression ought to reach the Senate this afternoon. It seems to me that as a representative body we ought to speak upon this question, and it seems to me also that the Legislature would be glad to hear from this body upon this important subject, for the amendment undoubtedly breaks the whole force of the present excellent law on vaccination. I therefore move that this resolution be adopted.

The motion was seconded, and the resolution was adopted.

Dr. DURGIN. I would also move that a copy of this resolution be sent immediately to the chairman of the Committee on Public Health on the part of the Senate.

The motion was seconded and adopted.

The PRESIDENT. Is there any committee to report at this time? If not, the Association will proceed with its regular business for the afternoon, which is, first, a general discussion of the recent prevalence of smallpox in Massachusetts and the lessons taught by it. I will call upon Dr. McCollom to say something concerning the recent epidemic in Boston.

Dr. J. H. MCCOLLOM. Mr. Chairman and Gentlemen: Smallpox in Boston has been a rare disease until within the last six or eight months. Perhaps it will be well at this time to look back to the earlier history of Boston previous to the discovery of vaccination. Previous to 1789 there were five distinct epidemics of smallpox in this city. These epidemics were so severe that in each of them nearly one-third of the inhabitants succumbed to the disease. It was during one of the later of these epidemics that inoculation came into use. In order to ensure the full benefits of inoculation, a hospital was established at Noddle's Island, one at Point Shirley, and one at Brookline, to which the people of Boston were allowed access. Inoculation diminished the number of deaths from smallpox, but it also served to keep alive the disease. It is interesting to notice that out of 5,075 inoculations at Point Shirley, there were only five deaths, showing that inoculation did diminish the severity of the disease.

In 1800, vaccination, the discovery of Jenner, came into use. I have here a paper published by the Board of Health of Boston in 1801, proving the protective power of vaccination, and in these days when so much is heard from the anti-vaccinationists that vaccination does not protect from smallpox, it is extremely interesting to notice that nineteen children were vaccinated in the first place, and passed through the disease of cow-pox in the natural way. Shortly after they were vaccinated, these nineteen children, together with two unvaccinated children, were inoculated with smallpox. The nineteen vaccinated children were exposed to smallpox for four or five weeks, and did not contract the disease, whereas the two who had not been vaccinated contracted it. The report of the Board of Health is as follows :

“REPORT OF THE BOARD OF HEALTH.

“The Board of Health for the town of *Boston*, are happy to have it in their power this day, to announce to their fellow-citizens the result of one of the most complete experiments which perhaps has ever been made, to prove the efficacy of the Cow-Pox, as a preventive against the Small-Pox; and while they take the liberty to congratulate the public on this important discovery, they do earnestly recommend its introduction generally, and are confident that it will be the means of preserving the lives and adding to the happiness of millions.

“The utmost care has been taken, during the experiments; and a detailed statement of facts are subjoined, for the gratification of every enquirer.

“In June, 1801, Dr. Jackson addressed a letter to the Board of Health, requesting their countenance in certain experiments which he contemplated making, to prove the efficacy of the Cow-Pox, as a preventive against the Small-Pox; to which application the avocations of the Board would not permit that attention which the plan proposed by Dr. Jackson required.

“In June, 1802, Dr. Waterhouse made a similar application, accompanied with a very minute history of that disorder, from himself, and also various documents in proof of its utility, from Societies in *New York* and elsewhere, who had associated for the purpose of making experiments similar to those proposed to be made by Dr. W., by which it appeared, that the public in those places, were deriving incalculable benefits by a pretty general inoculation. About this time the Small-Pox was raging in the family of Mr. Holden, *Fifth Street*, and three persons out of five, under the care of the Board of Health, had died. The Cow-pox had obtained much credit.

“The Board of Health, deeply affected with the fatal ravages of the Small-Pox, in the family before mentioned, and viewing their Institution as founded, under God, for the preservation of the health of their fellow-citizens; and believing, as they did, that this mild and safe disorder, “*the*

Cow-Pox," might be substituted for that fatal and distressing one, the Small-pox; so that if generally adopted, completely to annihilate and blot it from the catalogue of human woes; determined, under the influence of these considerations, to prove by experiments, to be made under their immediate observation, whether their faith in the efficacy of the Cow-pox was well founded or not.

"With this view, the plan of the experiments proposed were published in the newspapers, for the consideration of their fellow-citizens. The Secretary of the Board was also directed, in their name, to desire the assistance of Doctors Lloyd, Danforth, Rand, Jeffries, Warren, Jarvis and Waterhouse, who, agreeably to the invitation of the Board, met them at the Health-Office. Various impediments presented themselves in carrying into effect the plan as published. It was alleged, that the distance of *Rainsford's Island* from town, would prevent attendance of the gentlemen concerned, as often as would be requisite; and to make them in town, it would be necessary to have the permission of the town, in town-meeting, it being contrary to law to inoculate with the Small-pox without it. It was therefore determined to apply for this privilege; and the town being assembled for that purpose, it was objected to, on the grounds that it would alarm the country, and injure the trade of the town. After much debate, it was voted by the town — 'That the Board have power to make the experiments proposed, without the limits of the town; and to take up suitable buildings, etc. for that purpose.' It was with much difficulty a place could be obtained, comporting with the vote of the town. But started in the pursuit, the object, the happiness of mankind, the Board was determined that no difficulties which perseverance could surmount, should divert them from their purpose.

"At length Mr. Williams gave permission to erect a small building on *Noddle's Island*, and to make the proposed experiments there. Thus provided, on the 16th day of August, nineteen children, viz. :

DANIEL SCOTT, Chambers-Street.
ALMARIN CLARKE, Cornhill.
JOHN SILSBY, Prince-Street.
OZIAS GOODWIN, Charter-Street.
GEORGE GOODWIN, Charter-Street.
SAMUEL WATTS, Charter-Street.
SAMUEL RICHIE, Charter-Street.
ROBERT WILLIAMS, Cole Lane.
HENRY WILLIAMS, Cole Lane.
REUBEN LORING, Willson's Lane.

THOMAS TRUMAN, Dogget's Alley.
E. L. TRUMAN, Dogget's Alley.
JOHN WYER, Dogget's Alley.
SETH KING, Dogget's Alley.
GEORGE FORBES, Market-Square.
WILLIAM AUSTIN, Market-Square.
JOHN HARRIS, Fifth-Street.
THOMAS SPEAR, Friends-Street.
WM. GREENE, Hanover-Street.

Were inoculated with the Cow-pox, at the Health-Office, in presence of the Board, and of a number of gentlemen invited. The physicians who attend-

ed were Drs. *Lloyd, Rand, Jeffries, Warren, Waterhouse, Wells, J. C. Howard, and T. Danforth*; and the children went through the disorder to the satisfaction of the gentlemen, physicians and of this Board.

“Fresh Small-pox matter being obtained, through the politeness of Dr. Weeks, the proprietor of the Small-pox hospital at *Falmouth*—on the ninth of November, twelve of the children before named, together with *George Bartlett*, son of Dr. *Bartlett*, of *Charlestown*, who had the Cow-pox two years since, were inoculated at the hospital erected on *Noddle's Island*, with the Small-pox, from the matter obtained from Dr. *Weeks*—and at the same time two children of Mr. *Christopher Clark* of *Hinchman's Lane*, viz. *Thomas* and *John*, who had never had either the Cow-pox or Small-pox, were also inoculated with the latter; and in the proper time the arms (of the two *Clarks*) become inflamed—the symptomatic fever, and usual appearances attending the Small-pox, appeared—and finally pustules to the amount of about 500 on one, and 150 on the other, put forth and matterated, as has been invariably the case in all instances of the small-pox within our knowledge. From these two children, thus effected with Small-pox, fresh matter was taken; and the thirteen children before named, who were totally unaffected with the first inoculation with Small-pox, were again inoculated on the 21st day of November; and the other seven children who had the Cow-pox as first mentioned, were also inoculated with fresh matter from the *Clarks*; and the whole remained together in the same house, in the same room, and often in the same beds, without producing the least appearance of the Small-pox, either by uncommon soreness of the arm, headache, the least degree of fever or pustules—and this we certify to the public, having daily visited the Hospital ourselves, and made the most critical observations and inquiries, which are confirmed by the report of the physicians who attended the experiments (hereto annexed) and therefore are confident in affirming, that the Cow-pox is a complete preventive against all the effects of the Small-pox upon the human system.”

“THE PHYSICIANS' REPORT.

“With a view of ascertaining the efficacy of the Cow-pox in preventing the Small-pox, and of diffusing through this country the knowledge of such facts as might be established by a course of experiments instituted for the purpose, and thereby removing any prejudices, which might possess the public mind on the subject, the Board of Health of the town of Boston, in the course of the last Summer, came to a determination to invite a number of Physicians to co-operate with them on this important design; and with a liberality becoming enlightened citizens, erected a Hospital on *Noddle's Island*, for carrying it into execution. Accordingly, on the sixteenth of August last, nineteen boys, whose names are subjoined, were inoculated for the Cow-pox at the office, and in presence of the above-mentioned Board, with

fresh, transparent Cow-pox matter, taken from the arms of a number of patients then under this disease. These all received and passed through the disease to the complete satisfaction of every person present, conversant with the disease.

"On the ninth of November, twelve of the above children, together with one other, George Bartlett by name, who had passed through the Cow-Pox two years before, were inoculated for the Small-Pox on *Noddle's Island*, with matter taken from a Small-pox patient in the most infectious stage of that disease. The arms of these lads became inflamed at the incisions, in proportion to the various irritability of their habits, but not to a degree greater than what any other foreign, virulent matter would have produced. The Small-pox matter excited no general indisposition whatever, through the whole progress of the experiments, though the children took no medicines, but were indulged in their usual modes of living and exercise; and were all lodged promiscuously in one room.

"At the same time and place, in order to prove the activity of the Small-pox matter, which had been used, two lads, who had never had either the Small-pox or Cow-pox, were inoculated from the same matter. At the usual time, the arms of these two patients exhibited the true appearance of the Small-pox. A severe eruptive fever ensued, and produced a plenteous crop of Small-pox pustules, amounting by estimation, to more than five hundred in one and two hundred in the other.

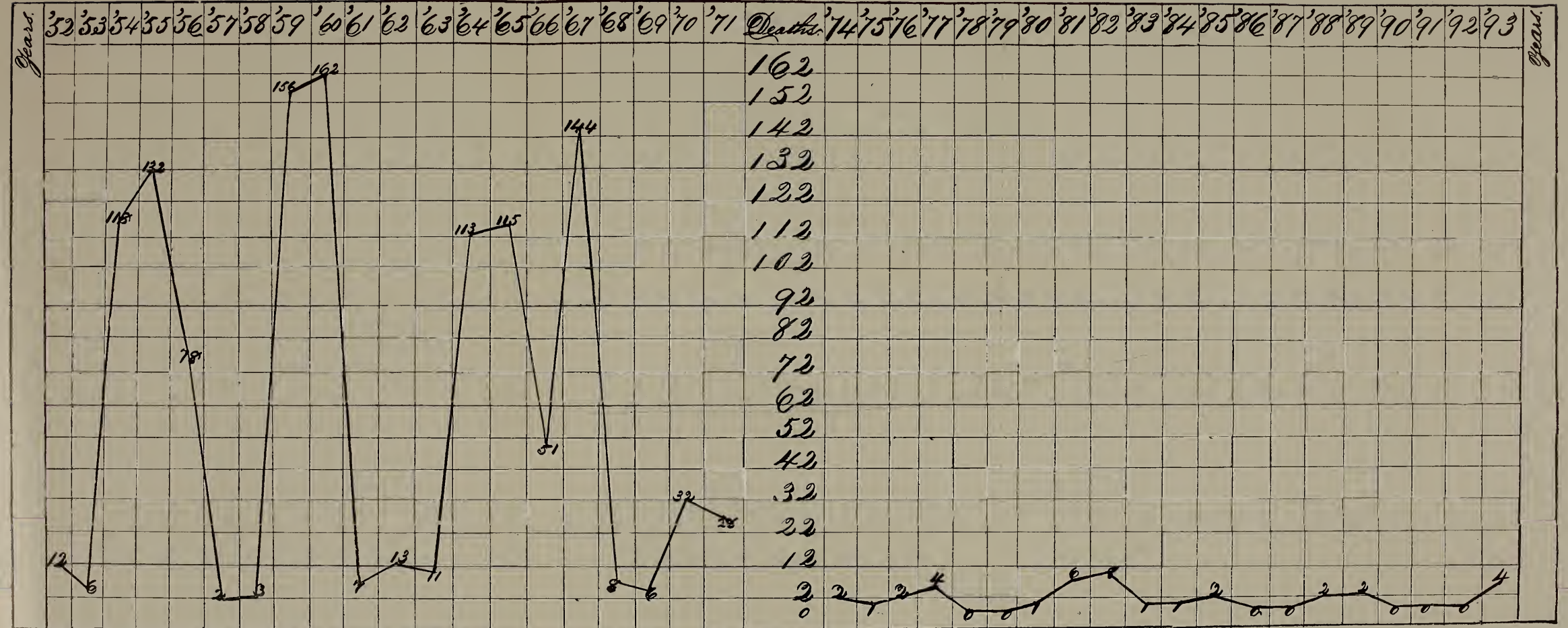
"When these pustules were at the highest state of infection, the thirteen children before mentioned, were inoculated a second time, with recent matter, taken from the pustules, which said matter was likewise inserted into the arms of the seven other children, who were absent at the first inoculation. They were all exposed, most of them for twenty days, to infection, being in the same room with the two boys, who had the Small-pox, so that, if susceptible of this disease, they must inevitably have received it, if not by inoculation, in the natural way.

"Each of the children was examined by the Subscribers, who were individually convinced from the inspection of their arms, their perfect state of health, and exemption from every kind of eruption on their bodies, that the Cow-pox prevented their taking the Small-pox, and they do therefore consider the result of the experiment as satisfactory evidence, that the Cow-pox is a complete security against the Small-pox.

"JAMES LLOYD.
ISAAC RAND.
SAMUEL DANFORTH.
JOHN JEFFRIES.
JOHN WARREN.
THOMAS WELSH.

BENJAMIN WATERHOUSE.
JOSIAH BARTLETT.
JOHN FLEET, jun.
JOHN C. HOWARD.
THOMAS DANFORTH."

DEATHS FROM SMALLPOX IN BOSTON FOR FORTY YEARS — 1852-1871, AND 1874-1893.



DEATHS, 1,197; POPULATION, 187,969.

DEATHS, 36; POPULATION, 402,081.

(Then follows a certificate made by Dr. Bartlett.)

“CHARLESTOWN, Dec. 15, 1802.

“This may certify, that my son, George Bartlett, at the age of eight years, was inoculated for the Cow-pox,” (of course, in these days we would say he was vaccinated, but that was the term in use at that time,) “on the eleventh day of November, 1800; that the appearance of his arm, and the symptoms, so fully corresponded with the plates and publications I had then seen, as to convince me, and others of my medical friends, that he had the disease.

“JOSIAH BARTLETT,

Fellow of the Mass. Medical Society.

“To the President and Members of the Board of Health,
“Boston.”

“BOSTON, December 8, 1802.

“We, Susanna Truman and Lucy Learned, nurses attending on the experiments corroborating the efficacy of the Cow-pox do certify that there was not the least sickness or appearance of Small-pox among any of the children who were subjects of the same, during their stay at *Noddle's Island*, excepting the two boys, Thomas and John Clarke, who had never had the Cow-pox, and were inoculated for the Small-pox, with a view to render the experiment more complete.

“SUSANNA TRUMAN.

“LUCY LEARNED.”

“Health-Office, BOSTON, December 16, 1802.

“Published by order of the Board of Health.

“ISAIAH DOANE, President.

“R. GARDNER, Secretary.”

It seems to me that this is an extremely valuable and very interesting document, and I will present it for your inspection.

On this chart you will see the deaths from smallpox in Boston for forty years — from 1852 to 1871, and from 1874 to 1893. The slight epidemic of 1872 and 1873 has been purposely omitted, as this was an exceptional time, and no reliable deductions could be drawn from it. During the twenty years commencing with 1852 and ending with 1871, when the average population was 187,969, there were 1,197 deaths from smallpox in this city. In 1852 there were 12 deaths; in 1853, 6; in 1854, 118; in 1855, 132; in 1856, 78; in 1857, 2; in 1858, 3; in 1859, 156; in 1860, 162; in 1861, 7; in 1862, 13; in 1863, 11; in 1864, 113; in 1865, 115; in 1866, 51; in 1867, 144; in 1868, 8; in

1869, 6; in 1870, 32; in 1871, 28. As I said before, the total is 1,197, with a population of 187,969.

You must also bear in mind that communication with foreign countries was not nearly so rapid as now, and that a person, during the years from 1852 to 1871, if he contracted the disease in Liverpool, would be very sure to be taken ill before the vessel arrived here. During the twenty years from 1874 to 1893, with an average population of 402,000, there were only 36 deaths. The number of deaths each year is as follows: In 1874 there were 2 deaths; in 1875, 1; in 1876, 2; in 1877, 4; in 1878, 0; in 1879, 0; in 1880, 1; in 1881, 6; in 1882, 8; in 1883, 1; in 1884, 1; in 1885, 2; in 1886, 0; in 1887, 0; in 1888, 2; in 1889, 2; in 1890, 0; in 1891, 0; in 1892, 0; in 1893, 4.

I would like to call your attention to this diagram that was taken from the report of a smallpox epidemic in Sheffield, England, from 1887 to 1888. You will see that there are six large squares, and that each of the large squares is divided into ten smaller squares. The squares divided by diagonal lines represent cases; the black squares represent deaths.

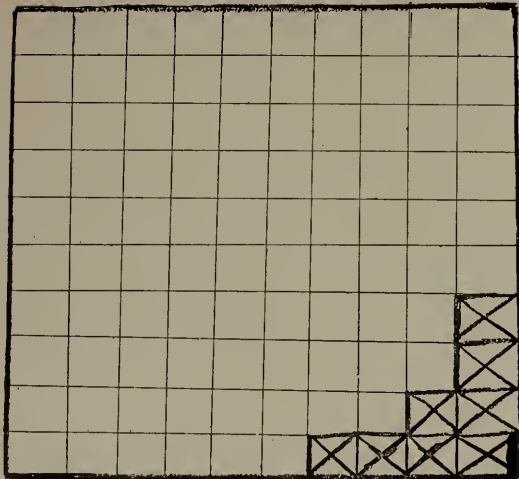
It will be seen from this diagram that of 4,493 vaccinated people exposed to smallpox under ten years of age, only 7.8 per cent. had the disease, and only one-tenth of one per cent. died; that of 13,423 vaccinated people of ten years of age and upwards, 28.1 per cent. contracted the disease, and 1.4 per cent. died; that of 18,220 vaccinated people of all ages 23 per cent. had the disease and 1.1 per cent. died. On the other hand, it will be seen that of 263 unvaccinated children under ten years of age exposed to the disease, 86.9 per cent. contracted it, and 38.1 per cent. died; that of 469 unvaccinated people ten years of age and upwards, 68.6 per cent. contracted the disease, and 37.1 per cent. died; that of 736 unvaccinated persons of all ages exposed to smallpox 75 per cent. contracted the disease, and 37.2 per cent. died. The difference between a death-rate of one-tenth of one per cent. in vaccinated children under ten years of age, as compared with a death-rate of 38.1 per cent. in unvaccinated children under ten years of age, can only be explained by the protective power of vaccination; and a similar remark is true regarding the difference in death-rate between the vaccinated of ten years of age and upward, as compared with the death-rate of the unvaccinated of ten years and upwards.

In Boston during this present epidemic, or, I should hardly say epidemic, but during this outbreak of the disease, we have had ninety-five cases of smallpox, or, to speak accurately, we have had ninety-six cases, because there has been one case reported since I came to this meeting. There have been twenty-six deaths. No vaccinated person has died. I have seen the arm of every person who has been at the hospital. I have searched carefully for a scar in every instance, and in no instance where I have seen a scar that was satisfactory to me, or a scar on account of which

Diagram of the Cases of Smallpox in the Vaccinated and Unvaccinated at Sheffield, England, 1887-1888.

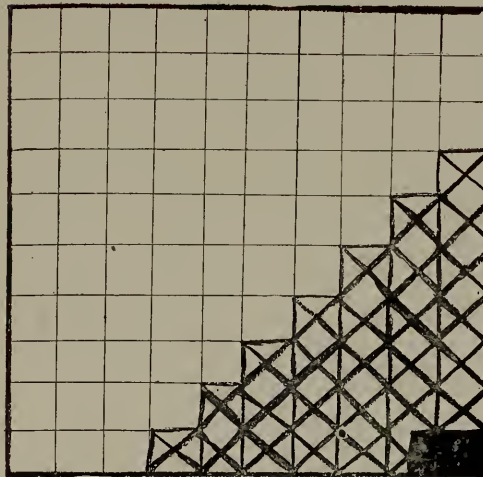
VACCINATED.

4,493
Cases, 7.8 per cent. Deaths, 0.1 per cent.



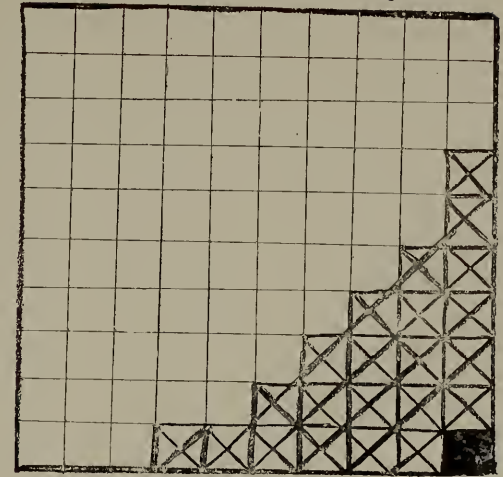
Under 10 years of age.

13,435
Cases, 28.1 per cent. Deaths, 1.4 per cent.



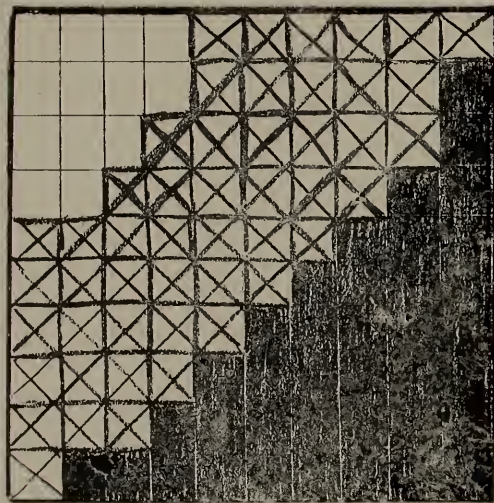
10 years of age and upwards.

18,020
Cases, 23.0 per cent. Deaths, 1.1 per cent.



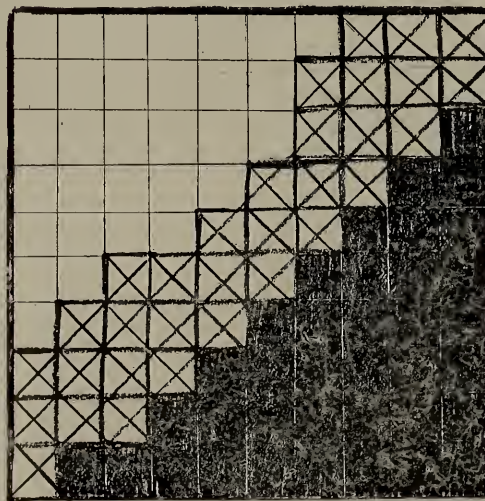
All ages.

263
Cases, 86.9 per cent. Deaths, 38.1 per cent.



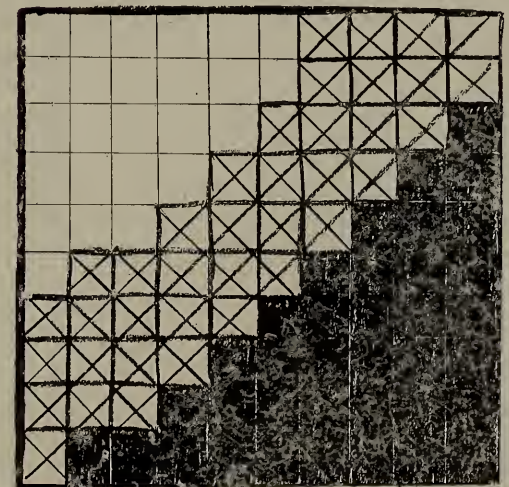
Under 10 years of age.

469
Cases, 68.6 per cent. Deaths, 37.1 per cent.



10 years of age and upwards.

736
Cases, 75.0 per cent. Deaths, 37.2 per cent.



All ages.

UNVACCINATED.

I should have given a certificate to allow a child to go to school, has a person been seriously ill.

Much has been said about the possibility of making a diagnosis before the appearance of the eruption. It is absolutely, morally and physically, impossible for anybody to make a diagnosis of smallpox before the eruption appears, and when I speak of the eruption I mean the eruption of smallpox. I do not mean the initial rash. Smallpox in a vaccinated person is very frequently so mild that it is almost impossible to make a diagnosis unless the physician is familiar with the disease. In regard to the isolation of persons who have been exposed to smallpox, it does not seem to me that this is important if other precautions are taken. It has been our custom in Boston, after a case of smallpox has been removed to the hospital, to have the patient's house visited every day or every other day by some physician. The moment that there is any appearance of illness in any member of the family, that person is placed under the most rigid supervision, and as soon as the eruption appears is removed to the hospital.

[At this point Dr. Walcott was obliged to retire from the meeting, and Dr. Durgin was called to the chair.]

The CHAIRMAN. Dr. Chapin, tell us something about smallpox up in Chicopee.

Dr. CHAPIN. Mr. President and Gentlemen: I do not know much about smallpox in Chicopee. I am not from Chicopee. I am from Springfield. Smallpox appeared in Holyoke some few weeks ago and later appeared in the city of Chicopee, about three miles north of Springfield. It appeared in a — there is nobody here from Chicopee, is there, Doctor?

The CHAIRMAN. No, sir; I think not.

Dr. CHAPIN. It appeared in a tenement house belonging to the Dwight Manufacturing Company of Chicopee. I think there were about twenty-eight people in the tenement house. The case that was discovered was some two weeks old. The whole population of the tenement house had been exposed, together with certain other people working in the mill. The Board of Health quarantined the tenement and the people in the building, and the disease has not extended much outside of the building in which it appeared,—I think not more than half a dozen cases. We are very closely connected in Springfield with Chicopee, but fortunately no cases have appeared among us. A few cases have sojourned with us, but those cases left the town the day before the eruption appeared. That is all I know about smallpox in Chicopee.

The CHAIRMAN. Dr. Field, of Lowell.

Dr. FIELD. Mr. Chairman: Dr. McCollom has said that we cannot make a diagnosis of smallpox before the eruption breaks out. The trouble has seemed to be with us in Lowell that we could not make the diagnosis

after the eruption broke out, because some of our oldest physicians there, physicians whom the Board of Health employed, thinking they knew more about smallpox than we did, were unable to tell the disease when they saw it. The first thing I thought of this afternoon when that paper was passed around was, if the physicians of Boston ninety years ago were convinced that vaccination prevented smallpox, we ought to be ninety times as much convinced of it. As they were then, we ought to be cranks on the subject of vaccination just as much as some of these people are cranks on anti-vaccination. We ought always, in season and out of season, to urge vaccination upon the people. If we are members of a board of health, we ought to have our neighborhood and employees vaccinated, and keep them vaccinated all the time. As physicians, when school children come to us in the fall to be vaccinated before they go into school, we ought to advise their parents and older brothers and sisters to be revaccinated. Do not put off vaccination until the epidemic occurs, but keep the inhabitants of the city vaccinated all the time.

1871

In Lowell we had a very severe epidemic of smallpox in 1881, one hundred and eight deaths occurring. Since then in two or three years there have been outbreaks of smallpox, with a few deaths. Last Christmas the present epidemic occurred. On the afternoon of that day we found a young bartender had been laid up for more than a week, and on the next day we found two girls who had been ill four or five weeks, so there were three cases which had been ill this length of time. This young bartender was attended by a physician who was dismissed just as the eruption began to break out. On the next day a young man who had never seen smallpox was called in and treated the case as a case of chicken-pox. The case was so much advanced that when I saw it, the day after Christmas, the pustular stage was already reached. At that time we had established a vaccination office in the barroom in which the young man was employed, but some members suggested that if we use such a very attractive place for a vaccination office the whole city of Lawrence would come up there, and so that idea was abandoned.

Our consulter, whom we called in on that case, for we had not seen more than four or five cases of smallpox, remarked that the first cases were the two girls whom he had seen three or four weeks ago. We found the house and found the two girls convalescing, but covered all over with scars, about two thousand, although they were not counted.

The history of the disease was that of a mild disease, but from these girls we traced it to this man, and afterwards to another person, tracing the contagion from one to the other. It seemed impossible that two girls had been suffering from smallpox for four or five weeks, and that persons had been in and out of the house during that time. Dr. Abbott, who came up.

afterwards to see the case, made a diagnosis, not from anything he could see on the patient, because you could see nothing but scars, but from the history of the contagion, spreading from these girls to this man and to others.

So we had three cases of smallpox at the start to which people had been exposed in great numbers. Afterwards we had other cases, nine in all, with three deaths. One case was a bad case, which we traced to this man, and which we sent to the hospital. The eruption came out when the vaccination sore on the patient's arm was at its height.

We had two other interesting cases. One was a milkman, who, when the eruptions were on his forehead, had been delivering milk about the city. Another was a nurse in a smallpox hospital who had had smallpox in her childhood, and we made the mistake of not vaccinating her, and after all the other patients had come down, she finally came down with the disease, and recovered.

Our treatment was to send every patient to the hospital. Following out the suggestion of Dr. McCollom, our hospital too was on the land, and I think almost every city, excepting those on the seaboard, would have to have a hospital on the land. We disinfected the premises as far as possible. I wish that we and all the cities in this State might have an apparatus for the disinfection of clothing by steam, the way they do in Boston. Our clothing we took to the cremator and burned up.

On vaccination I do not want to say anything. That subject comes up later. I simply want to speak of the large portion of the inhabitants of Lowell who were vaccinated. When we found that that milkman had been distributing milk throughout the city, we ordered a house-to-house vaccination in all parts of the city which he visited. About one-sixth of the city must have been vaccinated. In addition to that, some ten thousand were vaccinated at the City Hall and eight thousand at the hospital. 26,500 in all vaccinated out of 87,0000 inhabitants.

We believe in Lowell most thoroughly in quarantining a house, and we have an idea that if the houses had been quarantined in Boston, possibly we might not have had the smallpox in Lowell. We cannot prove that, but we know some of these patients who afterwards came down with smallpox would have gone off, and what town they would have gone to we do not know.

The CHAIRMAN. Mr. Bayles, of Lowell.

Mr. BAYLES. Mr. Chairman: I can only talk of smallpox from the point of view of the layman. I feel like taking some exceptions to Dr. McCollom's view of isolation. The cases of smallpox in Lowell occurred in a very compact community. The two girls who had been sick for five weeks were in a house adjoining the house which was first reported to us. The young

man had been visiting back and forth. He was acquainted with the young women, and his sisters were in the habit of going back and forth; in fact, the space between the two houses was only about five feet. The morning after Christmas, when we found these two girls sick, the question arose as to what we should do. It was a very serious question with us, but we finally decided that the best thing to do was to quarantine both houses, so we put a guard there. We employed policemen, but I should advise any Board of Health of any town not to employ policemen, because they are very expensive luxuries. [Laughter.] We found we had to pay the policemen three days for one. Then we had to keep them pretty well supplied with stimulants, because they had the idea that if they had plenty of rum they would not have the smallpox. [Renewed laughter.] We subsequently employed our own men who had been appointed constables, and the results were more satisfactory. They were better satisfied with what they got, and satisfied with reasonable compensation. We quarantined those two houses.

When the next case broke out it was across the street, distant perhaps about fifty yards from the first two houses. In that case the young women had visited back and forth in the house where the young man had been sick and where the two girls had been sick. We quarantined that house, which was over the barroom in which the young man was employed.

The next case occurred around the corner, distant perhaps about twenty yards from the house in which the first patient was found, that is, the first patient that we were apprised of, and then we put that quarantine there. We had a very compact district, and there was no difficulty whatever in keeping people within bounds. They took to it very kindly. We had to provision them and give them everything they wanted, in fact, a good deal more than they wanted, for some of them were very shrewd, and they discovered that they wanted barrels of flour, and we found subsequently in one place where we had sent a barrel of flour that after quarantine was removed sixteen days later, the barrel of flour was still intact. We had six families in quarantine. The clothing and furniture in the rooms of two of the patients were destroyed. Had we suitable apparatus for disinfecting we would have been spared that expense, but we had no means of disinfecting other than sulphur, although I have not much faith in it. I think the policemen who went anywhere near the place went in and smoked themselves two or three times a day.

We directed a rigid quarantine and a very thorough vaccination, which tended to shorten the outbreak. I do not think that it would have been possible for us in Lowell to permit any of the people living in the house of the patient to go about at their work, because the popular sentiment there is very much opposed to anything of the kind. People have a great dread of

the disease, and as we have so many factories there, everybody knows everybody else, and in a large mill it soon became known that Mary Flynn came from a house where they had smallpox, and we were obliged to establish a quarantine. As it was, we had numerous complaints from officious people who were always watching about for a policeman carrying cans to the people who were quarantined, and we had to shut off their beer. There was a great deal of complaint about that.

In regard to the moving of patients. We had a very antique and ancient vehicle, which in its palmy days had been used as an express wagon. It was impressed into the smallpox business about 1871, then carefully stored away in a shed, and reproduced again in 1893. We used it for an ambulance, and at night we used for a hearse. We learned from that that there was no reason why a person afflicted with smallpox should be treated with any such indignity, and it resulted in our purchasing an ambulance, which we have now, a very respectable vehicle, for conveying our patients to the hospital.

With regard to the hospital. In the old days it was considered anything was good enough for a small-pox patient. A person afflicted with the disease was treated much as a criminal would be,—hustle him out—

“Rattle him over the stones,
Only a pauper whom nobody owns.”

And so, in 1871 the city of Lowell erected what they called a pest-house. I trust the members of the Board of Health will never use that term. It is a very ominous and very objectionable term. It has great effect on ignorant people, who regard a pest-house as something terrible, something without hope, whereas the term “hospital” has not the terror that the name “pest-house” has. We have been trying up there to get the new set of men, when they make their reports, to drop the term “pest-house.” I think it should not be used, just because of the effect it has upon the minds of the people. We found it very difficult to remove people to the pest-house. They did not want to go there because they thought they would not be well treated. Perhaps they were not treated well in the old days when they went to the pest-house. We tried to give them the best treatment we could under the circumstances.

Our hospital is a large barn-like structure having seven rooms. It has no ventilation, no sewerage, no water, no gas, and no heating apparatus—only stoves—and in the winter when the temperature was low and the wind blew, it was a very difficult matter for us to keep all the patients comfortable.

There is no reason why a smallpox patient should be treated any differently than a patient suffering from typhoid fever or any other disease.

Common humanity should teach us to do the best we can for them, and one of the lessons we have learned from this epidemic is that the city of Lowell needs a new hospital, and is going to have one.

I do not know that I can say anything more about the matter. We have simply learned this: that we believe in quarantining all cases, and we believe that when a patient is submitted to our care or when we take charge of a patient, we are in duty bound, not only from a moral sense, but the sense of humanity, from every sense we are bound to give the patient the very best care we possibly can. [Applause.]

The CHAIRMAN. There are still a few minutes more which we can spare upon this subject before taking up the second one on the programme, and if there are other gentlemen who would like to say a few words on the lessons taught by the recent prevalence of smallpox, I should be glad to hear from them.

Dr. SWIFT, of New Bedford. Mr. President: You may be interested in a report of a few cases which we had in New Bedford summer before last, and I will read a short report of these cases.

On June 3, 1892, my attention as city physician was called to suspicious illness in the middle tenement of house numbered 944 South Water street.

The investigation showed a young man, John Andrews, in the pustular stage of smallpox; two children of George Rivers, at the beginning of the stages of desquamation; a young woman, Andrews, who had had a mild case of varioloid in the desquamative stage; and a baby of George Rivers two years old, in the pustular stage of smallpox.

Upstairs in the same house a French family lived; a man named York, with his wife and child, were visiting them. This child was in the pustular stage of smallpox.

The attending physician had considered these cases chicken-pox, and asked me to see them as interesting cases of that disease.

I asked him if he considered them suspicious, and he said he did not. I think the community is exposed to much danger by the ignorance of practitioners in regard to smallpox.

Exactly how physicians are to be trained in the diagnosis of this disease I do not pretend to say; but if there ever is a law passed regulating the practice of medicine in Massachusetts, I trust this Association will insist on at least a thorough theoretical knowledge of smallpox as one of the requirements.

The smallpox hospital had not been open for eleven years; but everything had been kept in readiness for cases, and the patients were all transferred to the hospital on the same day.

On the next day, another suspicious case was reported at 646 South Water street. It was found to be a case of smallpox in the beginning of

the pustular stage, the patient being Charles Andrews, a brother of John Andrews. He was immediately transferred to the smallpox hospital. The other people living in both infected houses were transferred to the old poor-house on French avenue, where a quarantine station was established for persons who, it was thought, had been in any way exposed to the disease.

The cases had been going on for at least two weeks, and it was impossible to say how far the contagion had gone.

On June 8, it was reported that William Andrews, a brother of the men who were already in the hospital, was ill. On investigation, he was found to have a mild case of varioloid. He lived at the east end of Coffin avenue. He was transferred to the hospital, and the other people in the house, to the quarantine station.

On June 9, a case was reported at 305 South Second street.

It proved to be a boy with a light case of varioloid. He was quarantined at home, and another family living upstairs in the house was transferred to the quarantine station.

On June 10, one of the children of the French family named Lemaux, who had lived upstairs at 944 South Water street, came down with smallpox at the quarantine station, and was at once transferred to the smallpox hospital. On June 14, the other Lemaux child also developed smallpox, and was transferred from the quarantine station to the hospital.

On June 15, Joseph Francis was found to be suffering from smallpox at 169 South Second street. He was employed by a grocer, and had taken provisions to the Rivers family. He was at once transferred to the hospital. He was seen at the beginning of the vesicular stage.

The day after he was transferred he had profuse hemorrhages from the nose, mouth, kidneys, and bowels. There were very few pustules, but ecchymotic spots appeared on his extremities, and on the calf of the left leg there was a slough about two inches across. He died the night of June 16, and was buried the next day in the burying-ground near the hospital.

The smallpox hospital, being a small building, was crowded, and it was thought best to construct a cheap building, to be used in case other patients had to be brought to the hospital.

A building was put up with eight rooms in it. It was not necessary to transfer any case to this building, but it was used for disinfecting purposes. One of the Rivers children, aged two years, had a severe confluent case of smallpox, and died from exhaustion. It was buried in the burying-ground near the hospital the next day.

On June 18, a case of smallpox was reported at 592 South First street. This was a French boy who worked in a cotton mill, and had no apparent connection with the other cases. He was at once transferred to the hospital. He lived in a large three-story tenement house, and it was impossible to take

all the inmates to the quarantine station. Only the families living on the same floor where the case occurred were transferred. The others were advised to leave the house, and they did so.

After the discovery of this case, it seemed probable that the epidemic might be extensive, and a general vaccination was advised and ordered by the board. This was carried out in all the factories in the city, and in the schools. A house-to-house vaccination was also ordered in the vicinity of the infected houses. There were 14,456 vaccinations made.

The physicians were instructed to vaccinate all persons who had not been vaccinated within five years.

All the tenements where cases of smallpox had been found were thoroughly fumigated and cleaned. All the furniture, carpets, and clothing that had been exposed were destroyed. The tenements were washed with corrosive sublimate solution, and were entirely repainted and papered.

The patients were kept in the hospital until all signs of desquamation had cleared up. Meanwhile they were washed with corrosive sublimate solution and soap. When they were released, they were thoroughly washed with a corrosive sublimate solution and given an entire outfit of new clothing. They were allowed to take nothing away from the hospital.

After being thoroughly disinfected in this way, they were transferred to the quarantine house, and kept there several days before they were allowed to come to the city.

No expense or trouble was spared to do this work thoroughly, and the result was that no new cases developed, either from the infected tenements or from the patients themselves. In my opinion, the importance of the quarantine station in this epidemic cannot be overestimated.

It enables us to vacate the infected houses at once, and not to have them occupied again until they had been thoroughly disinfected; it removed the persons living in these houses at once from a possible source of infection in the house, and it gave us the opportunity to watch the persons who had possibly been exposed to infection.

Establishing a quarantine station to which all persons who lived in the houses where cases of smallpox occurred were transferred, had much to do, I believe, with our success in stamping out this epidemic.

We had no power to compel them to go, but told them they must either go or be quarantined at home. If they remained at home they would not be allowed to work, but if they went to the quarantine station we would pay them their ordinary wages. Even on these terms we had much difficulty in persuading them to go.

We consulted our city solicitor in regard to this matter and he told us we had full power to quarantine people who had been exposed to smallpox in their houses, but no law gave us power to compel them to vacate their houses or to transfer them to a quarantine station.

I think the importance of vacating the infected houses cannot be over-estimated. In almost all tenement houses certain parts are used in common and people living in infected houses may be exposed to infection in this way. It is almost impossible to properly clean a house with people still living in it. It seems to me power should be given boards of health to vacate houses where cases of smallpox are found and transfer the people who may have been exposed to the disease to a quarantine station for observation.

Two cases of smallpox appearing in the quarantine station showed the wisdom of this precaution. There were thirteen cases in all; one a case of hemorrhagic smallpox, the patient dying before the pustular stage had developed; one case of confluent smallpox in a child of two years, the patient dying of exhaustion; two severe cases of smallpox in John and Charles Andrews; three confluent cases in the two Lemaux children and the York child; all these three children were very ill, but recovered; three cases were mild smallpox,—the two Rivers children and the French boy; and three cases of varioloid.

A point that came up during the epidemic may be instructive to the Association. The law of 1883 requires that when a case of smallpox occurs in a city or town, unless the local Board of Health notify the secretary of the State Board of Health within twenty-four hours of the occurrence of the case, the city or town loses its chance of reimbursment from the State, in case the patient proves to be a State pauper.

The clerk notified the secretary of the State Board of Health on the postal cards supplied to local Boards by the State Board for the weekly report. On this card one space is left for cases of smallpox. The cases were reported at once as one, two, or more, as they occurred.

This notice was not considered sufficient by the secretary of the State Board of Health and he failed to notify the Board of Lunacy and Charity, as he is required to do. Captain Shurtleff, secretary of the Board of Lunacy and Charity, held that he had received no notice and that we had forfeited our chance for any reimbursement. The matter was finally referred to the Attorney-General, and he decided that our notice was sufficient, as all that was required by law was a notice of the occurrence of a case of smallpox within twenty-four hours of the time it was reported to the local Board. Mr. Shurtleff, secretary of Board of Lunacy and Charity, however, held that for their department a special notice was required, as their general rule was to give no aid until after a report in full was made of a case. This view was not in accordance with that of the legal gentleman in the Attorney-General's office, but as the matter of the amount of money to be reimbursed is left by law entirely to the decision of the Board of Lunacy and Charity, we went no further to test the question. It seems to

me that all these laws need thorough revision, and that this Association should take some action in regard to this matter.

Dr. W. G. McDONALD, of Boston. Mr. Chairman: I did not intend to say anything on this matter, but since the discussion has started there are two or three points which have come to me. In the first place, in regard to Dr. Field's statement about quarantining in Boston. If Boston had been quarantined better, there would have been less smallpox. I can say this, that after a case was found in Boston, there was no question about keeping the patient in the house. The patient was removed to the hospital. The clothing, bedding, and such things were fumigated. Not only was that done, but the patient was questioned as to where he had been during the last few weeks. The patient's family were questioned, and every trace was followed up as far as possible. Every person who had come in contact with the patient was chased and followed for the next two weeks. It was stated that in Lowell one person knew the other. In large cities each one cannot know the other. Conditions have changed in large cities in the last twenty-five years. We have had a large tide of emigrants and a much different class of emigrants in the last twenty years. We have now one hundred thousand inhabitants more than in 1872, and a different kind of emigrants. At that time the most of the people who came here were from the British Empire or from Germany. They were people who came here to settle and become citizens of this country and become amenable to our laws and follow our habits. They are not so to-day. We have to-day Russian Jews; we have Italians, we have Portuguese and Chinese. We have a different class of people who come here to follow their own customs.—people whom it is very difficult to trace. We have in every instance tried to trace the case to its origin, and we have tried to follow it to its conclusion. In many cases we have failed in tracing it to its origin because of the difference in the people who are here to-day. That was one of the important lessons of this epidemic, different from any other epidemic that we have had.

Besides that, we have the question that has been raised already as to pest-houses. People dread a pest-house. We have, not a pest-house, but a hospital, with the most approved appliances, the most careful nursing and scientific treatment. That should be considered by the people, and the people must be educated in order to appreciate these things. There are cases where people have concealed themselves, and we found them only when the eruption broke out.

We have also the question of the education of physicians. That is a very hard thing, because smallpox is a rare disease, and being rare, a student may go through his course without ever coming in contact with a smallpox case; and if in his course a smallpox case arises, we cannot show it to him—we cannot show it to the entire class. The only education the

students can get is a theoretical one, and that they are as apt to forget as they are the types of any other disease which we do not happen to have in this climate. But we can teach them in varicella. We have had here one such case where they followed an advanced case of varicella, and each student, I think, should be taught in that as well as vaccination.

DR. FIELD. Mr. Chairman, I think the conditions in Lowell are very different from the conditions in Boston. Possibly if Dr. McCollom was in my place in Lowell he would quarantine his smallpox patients there, and probably if I were in his place in Boston, I would not quarantine my smallpox patients here. In Lowell the people largely know each other. I do not mean the patients, I mean the families, Doctor. The families in this locality were all related directly or indirectly through marriage, and they may have been visiting backward and forward, and we felt sure that after we had quarantined the houses we would have no walking cases of smallpox. Under the circumstances, we think it was the part of wisdom to quarantine.

MR. BAYLES. Mr. Chairman: In Lowell our conditions are very different from those in Boston. Our people work in the factory. In the first instance, where we took that young man, our first case, there were eight persons living in that house. One of those persons was taken sick with the smallpox ten days after we had removed the case. That young woman worked in a factory employing about two thousand people. You can readily see the danger there would be in allowing that family to go to work in the mill among all these people. There were three of the quarantined people working in a factory employing two thousand, two in a mill employing three thousand, and two in a mill employing five hundred. The agents of those mills were extremely solicitous that we should allow no one from the infected houses to come to work, and they absolutely refused to admit them into the mill. They feared that the disease might be brought into the mill, and that they would be subjected to great expense and annoyance in disinfecting their goods before they could ship them to market.

I may also say in respect to the daily examination of the people living in infected houses, that Dr. Field went every day and made an examination of all the people who were quarantined.

DR. MCCOLLOM. Mr. Chairman: I would like to say that this person could not have communicated the disease until she was taken ill. That was just the point exactly. After having been exposed to smallpox, and after having the clothing thoroughly disinfected, the person could not communicate the disease.

DR. FIELD. Don't you think she could carry the disease?

QUESTION. Don't you practically quarantine all other diseases, as, for instance, where children go to school where children have had scarlet fever?

Dr. McCOLLOM. We do not have anything to do with that. I think it would be better for the children to be inspected in every case of scarlet fever and diphtheria. I think by inspection, although it will require a great deal of work, much more good will be accomplished for the community, and will stamp out the disease much more thoroughly than by quarantining. If we watch them and disinfect their clothing before they come down with the disease, it is impossible almost for them to communicate the disease.

Mr. BAYLES. Sometimes they are too slippery to watch, Doctor.

Dr. ———. Mr. President: It seems to me this method of Dr. McCollom causes a good deal of trouble. Of course, it may be all right as far as the people are concerned, but the rest are put to considerable trouble. I think if the house had been quarantined in the first place, they would not have got to Lowell.

Dr. SWIFT. May I ask a question? When cases have been coming on in a house for some length of time, is it not a safer method to vacate that house? There are certain parts of tenement houses that are used in common; for instance, the basement usually, and possibly the water-closets; and is it not a safer way to vacate the house, if that is possible, at once, and to have it thoroughly cleaned: remove the people, if they have not already been exposed to the disease, and to permit them to come back when the house has been thoroughly cleaned and thoroughly disinfected, and in case of the patients being sent to the hospital, when the people are perfectly well return to the house? It seems to me that is the most thorough way of proceeding, if it is possible to do it. Of course, I do not mean to say it is always possible. In such a place as New Bedford the houses are small, and it is possible in most cases. The houses, as I have said, in this small outbreak were vacated and the people were not allowed to go back. We did not absolutely control them, but we persuaded them not to go back until everything was perfectly safe for them to go back. Meanwhile we supported them,—bribed them to stay away.

The CHAIRMAN. It is getting rather late, and in justice to our next subject I think we shall have to take it up now,—“Vaccination and Its Results.” I will call on Dr. Abbott, Secretary of the State Board of Health.

Dr. S. W. ABBOTT. Mr. Chairman: The transition from smallpox to vaccination is so natural, that I may say a word about smallpox before referring to vaccination. There may be some here who have never seen a case. Here are some photographs taken at the smallpox hospital about ten years ago, which give an excellent idea of its appearance. I will pass them around so that you may see what the typical cases are. There are five or ten pustules to each square inch of body, not quite confluent, but very nearly so. The photographs show the stages from the very first day of the outbreak to the fifteenth day or thereabouts.

Another point is in regard to the time of incubation. Dr. L. Parkes has published a most excellent summary in regard to infectious diseases, in which he gives the least time of incubation at nine days and the longest time fifteen days. Not less, I should say, than fifteen days, would be a pretty good rule for quarantine purposes. Upon this question of vaccination the information to be obtained from the medical journals is slight. In fact, in America, almost throughout the whole country, statistics are entirely wanting on this subject. I have here a tabulation of all the cases that have been reported to us, which probably constitute about all in the State, at least nine-tenths,—from the first of January, 1893, and also a more complete summary for ten years. There have been since that time, that is, in about fifteen or sixteen months, some 188 cases reported to us in the State, all of which, excepting eleven, have been reported within the past seven months. Those eleven were in the early part of 1893. Then there were none for several months until the outbreak began in October, and increased. Then I have a tabulation of cases including the most of those back to 1885. The total number of cases reported to the State Board of Health was 267. There have been enough within the last few days to bring the number up to about 300 or 310. The percentage of deaths is 19 1-2. This is about the average fatality for smallpox. Generally the fatality of it is about 18 to 20 per cent., and that is just where the anti-vaccinationists at the State House always attempt an argument,—that the fatality in this century is no different from what it was in the last century, but they say nothing about the comparative fatality of the vaccinated and the unvaccinated.

I have carried this out as far as possible, and taken the fatality among the vaccinated and unvaccinated in Massachusetts. Of course, there are some cases that have to be thrown out altogether; the facts are unknown or indefinite, based entirely upon some hearsay statement of the patients themselves after the eruption has broken out, and you cannot tell whether they were vaccinated or not. Out of 104 persons who were vaccinated only 6 died, while of 122 persons unvaccinated the deaths were 35, or 28.7 per cent.—nearly five times as high a percentage. The doubtful cases were 41. Deaths among these were 11, a percentage of 26.8, nearly the same as the unvaccinated.

The proof of vaccination statistically is made in several ways. Some methods are more convincing than others. For instance, one proof is that the mortality from smallpox in this century is very much less than it was in the last century. For instance, there were 840 deaths in Boston in 1721, out of 12,000 people, which would mean about 25,000 deaths to-day in the population of Boston, which would be enormous; but it is nothing in this century to what it was in the last; it is nothing now to what it was twenty-five years ago. But that is not sufficient. It is not true that

the State Board of Health, and even local Boards of Health, have accomplished all this. They have accomplished a great deal, but not all.

Another and much better proof is to take a vaccinated community, thoroughly vaccinated, and compare it with a partially vaccinated community. We have the fact that whereas Germany has forty or fifty millions of inhabitants, surrounded by other countries partially vaccinated, Germany has its law (which is not only a law, but it is an enforced and absolute law, for it is an imperial government), that a child shall be vaccinated practically before it is eighteen months old. Then every scholar must be revaccinated at the age of twelve years. Now about the only unvaccinated persons in that country are persons who have come there from Russia, where the law is very lax, or from Italy, or from France, or from Spain, or some other neighboring country; and when any of these die in Germany, of smallpox, of course the death is credited to their death-rate.

Now, the death-rate of Germany for the year 1891 from smallpox was almost nothing when compared with that of these neighboring countries.

Then another very convincing argument is the fact that in the last century smallpox was almost absolutely a disease of children,—a disease of children under ten years of age. The figures upon that subject are not very many or very great, but they relate to a few cities where old registers have been kept very carefully by the schoolmasters, town clerks and others in England, and also in the city of Geneva, Switzerland, and a few other places, where they show that smallpox was confined almost exclusively to children under ten years of age. For instance, out of a thousand persons in two or three English towns who died of smallpox, there were not more than ten or a dozen over ten years of age. We do not have that now. A very considerable percentage of the deaths from smallpox are among people who are over fifteen or twenty, simply because they have been protected by primary vaccination, and the disease is thrown forward to later ages; and as they have neglected revaccination, then we have mortality among the vaccinated, and that is where this adult mortality comes from. There are deaths among the vaccinated because they have neglected revaccination.

Now a word about those who claim to have been revaccinated, and yet have had the smallpox. If those persons had been examined carefully, we should have found that they had not been revaccinated, or that the vaccination was of a very limited character. Every person in Germany who is vaccinated is vaccinated three times on each arm, and it is very thoroughly done. I do not know that that is the law, but that is the custom, and I think in London also.

There is another point in regard to the London statistics which is shown in the law upon that subject. Every child who is vaccinated, at any rate

every one who is vaccinated at the public expense, must by law, under a penalty, be brought back to the public vaccinator at the end of one week to be examined. That is a very useful law indeed, because a great many physicians might otherwise vaccinate children and let them go without further inspection. It is a very lax mode of procedure to allow the child to pass out of your sight without seeing it again at the end of a week.

Then in regard to methods of selling vaccine lymph. In many cases we know nothing about the mode of obtaining it. That may come up hereafter. I won't speak of that now, but there is one thing which affects this question,—the age and freshness of lymph. Dr. Corey's vaccinations in London are made with fresh lymph. The calf is vaccinated at his station, and the children are brought there when the lymph is to be taken fresh, and the fresh lymph is inserted into the child's arm.

I think that would be a very good addition to our law, but perhaps it could not be enforced except where children were vaccinated at the public expense.

The CHAIRMAN. I would like to ask Dr. Abbott if he can give us some brief data as to the difference in protection between one and many scars.

Dr. ABBOTT. Well, upon that point the principal authority is Dr. Marson, of England, who has made that one point a specialty, having examined a great many cases. It is true that a thorough vaccination is more protective than a limited one. Dr. Marson gives the ratio. I cannot state what the ratio exactly is. It is a diminished one, according to the number of scars. That is, the number of persons who took smallpox with one vaccination mark was greater relatively than those who had two, three or four, or five, or six, as the case might be. It is a fact that old lymph, that is, three, four, or five weeks old, might not produce so large scar, when it produces any at all, as that which is fresh from the calf. I have noticed that myself: that sometimes lymph that is just losing its efficiency will give you a little vesicle perhaps no larger than a small pea or the head of a pin. Perhaps you may have noticed that, Dr. McCollom.

Dr. MCCOLLOM. Yes, I have noticed it, although I never use lymph that is more than two, or three, or four days old.

Dr. ABBOTT. If we could do away entirely with the selling of vaccine lymph, and have it issued directly from a station, as it is in many foreign countries, directly to the physician who uses it, coming from a source that he knows he can rely upon as to the date it is taken from the animal, and not simply the date that it is sold to him,—as I have known here in Boston,—then we should have something that would be of value to us.

Dr. GAGE, of Lowell. I have been asked to say a word or two upon the technique of vaccination, and I will speak of these points: First, what we do when we vaccinate, and how we do it, and the responsibility of boards of health in seeing it done right.

I am not going to give an argument. I am simply going to state my belief and leave to you the discussion of it.

What do we do when we vaccinate? I suppose we introduce into the body a living organism. Possibly the living organism is the cause of small-pox. That is what we do theoretically. Practically we have introduced something besides this bug into the body, a germ which causes the formation of pus in the body.

How do we do it? I will tell you now how I do it. The arm of the patient is first made clean with scrubbing with soap, and water, and brush. By "clean" I mean sterilized. Then a fresh point is scratched upon the arm; and third, the arm is kept clean by putting on a sterile dressing, which is sealed on, and remains until the vaccination has taken.

Now, as I say, sometimes we do more than this. We introduce besides this living germ which causes pus,—and I want to state as my belief here that the germ, if it be that, or what we introduce for vaccination, does not cause a formation of pus.

I do not believe that is produced by the germ introduced for vaccination. I believe that is caused by filth, and that we are reprehensible for those results.

Now I want to speak of another matter in which boards of health are interested, and it is based upon my observations. I am going to speak right out in meeting. There is a law which compels corporations to vaccinate their employees, and when a board of health notifies a corporation that they must do it, they are obliged to do it. That is, it is done by the order of the board of health directly, not as a matter of law. Now, the corporations at home vaccinate in this way: They make a contract with some doctor to come there and vaccinate the employees, and I happen to know as a matter of fact that a large number of corporations at home made a contract this year to have their employees vaccinated in their mills at four cents a head. In order to make anything out of that, the doctor must vaccinate a given number of people in a given time, and he has vaccinated from sixty to eighty people an hour, and one woman claimed she vaccinated one hundred and twenty. That means two persons vaccinated in a minute. I think such methods are reprehensible. The boards of health are established for the promotion of the health of the community, and they should see that their orders are carried out properly. I believe that they should insist upon these three points,—a clean arm, a clean operation and clean dressing. I believe it is incumbent on boards of health, when they issue these orders to the agents of corporations, to see that this is done in accordance with sound principles. That is all I have to say on this subject.

I would like to say a word about vaccination as a preventive of small-pox. Dr. McCollom spoke of the isolation of the patient in a smallpox

hospital. I think, if I could have only one of the two, either isolation or vaccination, I would give up isolation and take vaccination. I believe vaccination is always cheaper than an epidemic.

I do not agree with Dr. McCollom. I think the time will come when it will be a reproach to any city to have any epidemic, and I believe that time will come when we establish a quarantine.

Dr. ABBOTT. I would like to say one word in reference to the supposed insusceptibility of certain children. I do not believe it exists. Dr. Corey has vaccinated fifty thousand children in succession, without a single break. Some of those had to be revaccinated in order to make it take, to be sure, but they all took. (See Dr. Corey's testimony in Report of British Parliamentary Commission of 1889.)

The CHAIRMAN. It seems to me that this subject is not exhausted so long as there is anything to be said concerning the repetition of vaccination, its thoroughness and the susceptibility found in different individuals. We have those here who have done a great deal of this work. I would state, as a matter of fact, we have seen one case here in Boston where vaccination had never been successful, and that person was a nurse in the smallpox hospital for nearly twenty years, and never contracted the disease. That would represent one of the extremes, and I presume there are other extremes where we might find that a person would show a susceptibility to vaccination about as often as it was applied. Has Dr. McCollom any data that he would like to give us on that point?

The CHAIRMAN. The case to which I referred, Doctor, was not a man; it happened to be a woman, in the person of Mrs. Powers.

Dr. MCCOLLOM. I do not know that I saw Mrs. Powers all the time she was there.

The CHAIRMAN. I think in her case vaccination had never succeeded, and she had never taken smallpox, although she was a very old nurse in the hospital.

Dr. DAVENPORT. Mr. Chairman: During the epidemic of 1871, when I was vaccinating for the city, one case I vaccinated where there was a scar of smallpox, and the vaccination took. As far as I could see, it was a typical take.

Dr. MCCOLLOM. We have had half a dozen cases of a second attack of smallpox. In one case a man had a third attack of smallpox and died.

Dr. DAVENPORT. And there was an infant less than one year of age who died of a second attack.

Dr. C. C. ABBOTT, of Andover. I will report one case where we had a patient who had had smallpox, and showed the characteristic pitting on the face markedly, and as all the inmates of the house were vaccinated. I vaccinated him, making two marks on the arm, and he had two typical, well-

marked vesicles. They came out, the scabs came off, and no ulceration followed, but the typical scar is very marked in his case. He had smallpox two or three years ago in some foreign country, and came here as a sailor. He said they let him go on account of the scars on his face.

The CHAIRMAN. Is there anything further to be said on this subject? If not, a motion to adjourn will be in order.

Adjourned.

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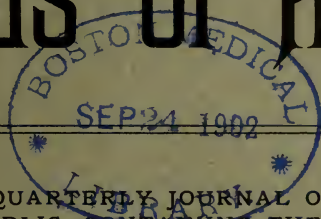
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SEPTEMBER, 1894

No. 3

RECORDS OF July Quarterly Meeting.

SUBJECT:

“Tuberculosis as an Infectious Disease and
its Relation to Meningitis.”

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SUBJECT :

Tuberculosis as an Infectious Disease and its
Relation to Meningitis.

About Baking Powders.

The question of superiority amongst Baking Powders has long been a mooted one in the minds of the public. No sooner does one see the announcement in bold type that a certain brand is absolutely pure, and the only real Simon pure article in the market, than, turning to another page, or mayhap the very next column, he is told in equally positive terms that the other firm is very much mistaken, and that people who want a really pure article should never think of buying any but ——'s, etc., etc.

This is a good deal like a chapter in Bellamy's famous work, wherein he shows up the confusing signs displayed by rival merchants: "*I am Jones, the only real and original Jones, buy of Jones if you would avoid being cheated*"; and, across the street, another sign in letters equally large and vivid: "*Only one Jones, all other Joneses are frauds and humbugs, be careful and get in the right place, don't go across the street on any account whatever.*"

The truth is as between first-class Baking Powders there is really very little difference. Manufacturers nowadays realize the importance of *Purity*, and any reputable merchant cannot afford to sell an article that is impure, although it must be allowed that many are not as particular as they should be as to the ingredients of many things, and look to profit before they look to purity. But it still holds good that the better class of dealers are particular to sell a good article in preference to an inferior one even at some expense of profit.

After purity the question which interests housekeepers most is *price*, and on this point there seems to be reasonable cause for complaint. It has never been exactly plain why the public should be charged a high price for an article, simply because it is a pure article. Purity is not an extraordinary virtue in anything; and while it is always desirable, and in most things absolutely necessary, there is no good reason why the public should be required to pay a manufacturer more than the highest market price because he puts up a pure article of merchandise which would be useless if it were not pure,—in fact, could not be sold at all if it were known to be impure.

For this reason we think that some widely advertised Baking Powders are in a sense taking advantage of an ordinary situation to charge an extraordinary profit, and the wonder is why the public continue to pay this extraordinary profit, when Baking Powder that is strictly pure can be obtained for considerably less. There is at least one Baking Powder which comes up to the standard of purity, and which is retailed at 35 cents per pound as against 40 to 50 cents per pound charged for the widely advertised brands. It is the BOSTON BAKING POWDER, which seems to fulfil all the requirements of a good Baking Powder, being "as pure as the purest," and as effective as those of much higher price. But it is possible that housekeepers are already aware of this fact, for a difference of 5 to 15 cents per pound does not long escape the notice of our shrewd New England housewives.

MASSACHUSETTS ASSOCIATION OF BOARDS OF HEALTH.

Organized 1890.

[This Association as a body is not responsible for statements or opinions of any of its members.]

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JULY QUARTERLY MEETING

OF THE

Massachusetts Association of Boards of Health.

THE quarterly meeting of the Massachusetts Association of Boards of Health was held at Gallup's Island on the afternoon of Tuesday, July 24, the President, H. P. Walcott, M.D., presiding.

THE PRESIDENT.—Gentlemen of the Association will please come to order. The records of the last meeting unfortunately are not here, so that you will have to dispense with the reading of them, at this meeting at any rate. In behalf of the Executive Committee, I will report that they have considered and respectfully present to the Association the following names for election to membership:—

W. P. BOWERS, M.D., Clinton.
J. A. DOUGLAS, M.D., Amesbury.
J. A. FITZHUGH, M.D., Amesbury.
H. COOPER, Amesbury.
E. L. WARREN, M.D., Melrose.
E. M. PARKER, Cambridge.

CHARLES HARRIS, Cambridge.
W. B. SMITH, Everett.
G. W. DAVIS, Everett.
F. J. RIPLEY, M.D., Burton.
L. B. CLARK, M.D., Waverley.

The above-named gentlemen were then duly elected to membership in the Association.

THE PRESIDENT.—Is there any incidental business to be brought before the Association at this time? Is there any committee prepared now to report? Before proceeding with the regular business of the afternoon, which is the discussion of Tuberculosis, I would like to say that the Board of Health of Cambridge invite the Association to meet with them at the October meeting. The date will be duly announced to the Association. The regular business of the afternoon is the discussion of Tuberculosis, which will be opened by Dr. Chapin, of Springfield.

REMARKS OF W. H. CHAPIN, M.D.

Mr. President and gentlemen,—I suppose it is not necessary to defend before this Association the proposition that tuberculosis is an infectious disease. For that proposition we have the observations upon animals, and the question is settled forever; but it seems to me that it is necessary to discuss from time to time the question how it is infectious, to what extent it is infectious, how serious exposure to the disease will cause its development, and to discuss the various other features of the disease as they come before us.

I have for some time been collecting statistics in regard to deaths from tuberculosis in the city of Springfield, and have now a record of all the deaths from tuberculosis since 1868. It seemed to me, when I began upon the work, that, if the statistics were to be of any value whatever, it was necessary to include in the list not only those cases which were confessedly tuberculosis, but also cases which seemed to me possibly might have been tuberculosis; and therefore I included in the list practically all cases of disease of the brain occurring in children, including convulsions, spinal meningitis, and various other more or less infrequent diagnoses of brain disease, excluding those cases of convulsions which occurred in adults as being more likely to be apoplexy or uræmia. Of course, many cases of typhoid fever and pneumonia would be included in tuberculosis if we had an autopsy upon the cases; but cases of true pneumonia and typhoid fever are so common that a list which contained those would be hampered by a large amount of extraneous material, and therefore those were excluded.

Since 1868, as I say, there have occurred in Springfield about 4,800 cases of death from the diseases of which my catalogue takes notice, including all confessedly tubercular diseases, and all cases of convulsions, spinal meningitis, cerebral congestion, hydrocephalus, cerebral spinal meningitis, tubercular meningitis, brain fever, and brain disease in infants.

Now, while there were 1,196 of these cases of brain disease in children, there were only 84 cases in the twenty-five years which are said to be due to tubercular meningitis; and I want to call your attention to the probabil-

ity that the diagnosis of tubercular meningitis is altogether too infrequently made. In classifying these 4,800 cases of disease, I was able to place 1,428 of them in a group by themselves,—namely, those that had relatives die of similar disease in the same period; that is, 1,428 fell into families, while in 3,372 cases no family relation could be traced. Of course, I do not mean to assume that these 3,372 cases had no tubercular relative: they simply had no tubercular relative die in the city of Springfield in the last twenty-five years.

The proportion of tubercular meningitis to other cases of brain disease was about the same in the family groups as in the other groups. There were 27 cases out of the total 346 in these tubercular families. The cases of death from brain disease occurred in certain peculiar relations to deaths from consumption. Thus 43 of the deaths (and there were in all 346 cases) occurred within one year of a death from consumption in the same family. 24 occurred within two years, 18 within three years, and so on, 12, 11, 12, 9, 5, and 5 within ten years. The descent is very even. The further away you get from deaths from consumption in the same family, the fewer cases of brain disease, so that at the tenth year there were only six cases, and after eleven only five, after the twelfth year only two cases. There was never any greater number than two after the twelfth year. 84 per cent. of all the cases of brain disease in children in tubercular families occurred within ten years, and 26 per cent. occurred less than one year from death from consumption.

Now, we know that a case of consumption of the lungs usually lasts three years at least. It is very seldom that we get a death from consumption in less than three years after its beginning; and we find that, of the deaths from diseases of the brain in young children occurring in tubercular families, 50 per cent. of all the cases occurred within three years of a death from consumption. In other words, diseases of the brain in tubercular families, such as convulsions, spinal meningitis, cerebral congestion, hydrocephalus, cerebral spinal meningitis, tubercular meningitis, brain fever, and other brain diseases in children, come just as near to a death from consumption as they can. The further away you get, the less number you have. Therefore, it seems to me that the majority of cases of brain disease in children are tubercular meningitis. Of course, where we have a case of suppurating middle ear or such a matter, it is not necessary to make a diagnosis of tuberculosis.

I have here a few family histories from which these statistics were compiled. I take, for instance, the L. family. In January, 1871, there was a death from consumption, and no more until 1879, when there was a child six months old died from marasmus; but two years later, in 1881, a person died of consumption again. The same year, two months later, another

child died of marasmus. In 1884 there was a case of convulsions. The next is another, indicating that there is a case of consumption yet to die in that family. (Laughter.)

Another family, 1882 to 1884. The first death was from scrofula, the second from consumption, and the third from tuberculosis of the brain.

Another family began in 1869, a death from meningitis in a young child. In 1873 was a death from consumption, the father; and about two months later was a death from cerebral spinal meningitis. In 1875 the mother died from consumption.

A family had in May, 1882, a death from consumption, in August a death from meningitis, a child; and in 1887, five years later, the mother died of consumption.

Another family began in 1875. They had deaths in 1875, '78, '79, and 1881. The first was from hydrocephalus, the next from convulsions. The third was an uncle of the preceding two, and he died from consumption. The fourth was an aunt, and she died from consumption. The fifth was a child, and died from meningitis about four months later than the last case of consumption. They inherited their tuberculosis from the aunt who lived in the family. The mother and father are still living, and are not tuberculous.

Another family had a case of consumption in 1873, in 1891 another case of consumption, and the same year one from brain fever. The next year, in 1892, the father died from consumption.

Another family, in 1878, 1879, 1880, and 1883, had deaths as follows: the first from consumption, the second from tubercular meningitis, the third from consumption, and the fourth from convulsions. They evidently had changed doctors. (Laughter.)

Another family in 1871 had a death from consumption. That was the grandfather. In 1876 there was a case of death from convulsions, a child only one year old died five years later than the grandfather did. It may have inherited convulsions from the grandfather, but just two months later the father died from consumption.

Here is a case where three adults died, two in 1879. Both of them died from consumption. In 1885 an adult died of acute meningitis. I suppose it was a case of tubercular meningitis.

Here is a case of convulsions in 1871, and then in the four years from 1876 to 1880 they have three deaths from tuberculosis.

Another family began in 1870. In March, 1870, there was a child three years old who died of meningitis, in 1871 another one, two months old, died of cerebral congestion, and July, 1873, one died of cerebral spinal meningitis. While those cases were going on, the father was actually tubercular; but he afterwards recovered.

Here is a curious instance of inheritance from a father's first wife. (Laughter.) She died long before tuberculosis appeared, Sept. 20, 1861, of consumption. She left one child. There was no more of that family who died until the twenty-fourth day of July, 1880, nearly twenty years later. At that time a child one year and ten months old died of meningitis. This was the child of the second wife. Next, a year later, the child of the first wife died from consumption; and there is where the inheritance came in. The first wife died of consumption; but she left a tubercular child who survived her twenty years. On the 27th of October, 1881, the same month, the grandmother of the family died from marasmus. In October, 1882, the next year, a child of the second wife died sixteen years old from consumption. The next year, 1883, a child of the second wife died of convulsions. There was a rest then of five years, and then a young woman died of inanition, and was insured in a so-called industrial insurance company. (Laughter.) In March, 1892, the last one of them died, about nineteen years of age, from consumption. The father of all this family is hale and hearty, and not tubercular, as far as I can see.

Here is a family which lost four members in one year and six months. On the 18th of February, 1884, one died, three years of age, of cerebral effusion. On August 7, the same year, one died of meningitis at the age of eleven years. On Sept. 1, 1885, one died, aged thirty-seven, from consumption. She was the mother; and on Nov. 1, 1885, the same year, two months later, a child three years and four months old died of meningitis. In that instance the case of consumption occupied the middle position, and cases of brain disease the others. Tuberculosis was not diagnosticated, although the woman must have been tubercular all the time. I have seen members of the family since; and they assured me the mother had tuberculosis, lasting about four years.

Here is a case where three members died. One died in January, 1879, from convulsions. One died in January, 1880, eight years of age, of meningitis, and another Aug. 1, 1880. The mother, thirty-seven years of age, died of consumption.

Here is a family that began in 1875. One died in 1879, Nov. 16, of convulsions; another on April 7, 1885, of meningitis; and then four cases of consumption, 1885, 1888, and 1889.

Here is a case Aug. 13, 1882, where a child two years of age died of convulsions. May 1, 1885, an infant two months old died of exhaustion. Sept. 28, 1885, a child four years old died of convulsions. April 30, 1886, a child two years and two months old died of marasmus. No more about that family except last year I was called in to see the people, and found that they had three surviving children, all in good health,—the father and mother in perfect health. I was asked to examine the mother's lungs, and

I found signs of healed tubercular cavities. While these children were dying of various convulsive disorders, she was then coughing and spitting about the house. It seemed to me then that our statistics of tuberculosis should include almost all cases of brain disorder in children; that, when as physicians we meet a case of brain disorder in a child, we should think of tuberculosis. And in the two histories that I have read the physical records show us that, unless there is a person in the family who is actually tubercular (I mean by that excreting tubercular pus), the children do not inherit it from their parents; and, if there is that condition of things, then children do inherit it.

That, of course, is true more distinctly of those people who are not scrupulous about household cleanliness. We do not find in our town that tuberculosis is very prevalent in our better wards. Where people have the instinct of cleanliness and the ability to care for themselves, the deaths from tuberculosis are very few, and, when tuberculosis strikes a family, it is a cause of comment; but in the lower ranks of life in our tenement houses, where the people do not have carpets, and where they think spitting upon the floor is not objectionable, provided it is rubbed around a little, there the death-rate from consumption is excessive, the death-rate from meningitis is perfectly appalling.

In a former talk to this Association at Springfield, where there were but few present, I had prepared a map showing the location of deaths from consumption in the city, and that, if I had it here, would show you more clearly than anything that I can say that the districts where the houses are new, and the people well-to-do, have less of consumption, while in those districts where the houses are old and the people poor there the disease is rampant. There is where our scarlet fever and diphtheria flourish; there is where tuberculosis flourishes, and wherever you find one of them you find the other. In those old houses the floor and walls are reeking with it. (Applause.)

THE PRESIDENT.—Dr. Ernst has kindly consented to be with us, and we will have the pleasure of hearing from him. (Applause.)

REMARKS OF H. C. ERNST, M.D.

Mr. Chairman and Gentlemen,—It is perfectly true that I consented to come; but I thought I was invited to something that would be delightful to me, and it was not until within a day or two that I realized I was expected to speak to this Association. Therefore, I have no prepared paper to read to you; but there are some points that I may perhaps bring out from the scientific side that will be of interest.

Of course, as Dr. Chapin has said, it is not necessary to emphasize to-day

the infectious nature of tuberculosis, and neither is it necessary to state why it is especially an appropriate subject for discussion before an assembly of members of boards of health. Its very wide prevalence is one reason why it is to be taken cognizance of in this way; and, while I am not one of those who believe in its hereditary nature, nevertheless the wide-spread scattering of infectious material, and the characteristics that are attached to that infectious material, account to my mind perfectly for the number of cases that occur in the same family, or in the families of the same neighborhood, and especially in the families that live under poor hygienic conditions.

The characteristics of the bacillus of tuberculosis are somewhat different from those that are attached to the other bacteria producing infectious diseases, and require a knowledge which is different in order to intelligently handle it; and perhaps the most marked of these characteristics is the extreme resistance of this organism to destructive agencies. I do not think any better illustration of that can be given than to speak of certain experiments that were made by Dr. Stone, one of my assistants at the medical school, who, when he was a student, was studying certain samples of tuberculous sputum. The jars containing that sputum were allowed to stand for a long time. They were simply left in the laboratory; and some three years, almost four years, afterwards they turned up. Of course, the sputum had dried almost to the hardness of stone; but, by softening them with sterilized water and making inoculations with these specimens, it was shown that the bacillus of tuberculosis had retained its vitality during that great length of time, and therefore drying all this length of time had no complete destructive effect. Of course, I do not mean to say a number of bacteria had not been destroyed, but there were enough there to be evident under the microscope, and to be evident upon inoculation in the lower animals sufficiently to be productive of tuberculosis; and it seemed to me that that was a very instructive thing, and, if it were more widely known, would lead to more attention being paid to this very admirable circular of the State Board of Health, and the precautions that are suggested in this little paper that is issued by the State Board of Health. What can be said in regard to the precautions to be taken against the spread of tuberculosis is practically contained in these few clauses.

There is no question at all but that by far the most general source of infection of this disease is the expectoration from persons affected with pulmonary tuberculosis. Any one who has given the slightest attention to that knows of course that the sputum is scattered about in the streets, is scattered about more or less upon the floors of tenements, and also sometimes upon floors that are not by any means in tenements.

Dr. Chapin spoke about the lower classes spitting upon the floor. It

was my fortune some years ago to call upon the head of one of the largest departments of the United States Government in Washington, in his magnificent office in one of the largest public buildings, a room that must have been forty feet square at least; and, while I was there, he frequently expectorated upon the rug.

DR. CHAPIN,— He was one of the lower classes.

DR. ERNST,— Very true; but it is not always in tenements that that occurs. It was one of the most disgusting exhibitions I ever saw. I thought of the representatives of foreign governments calling upon him and being received in that way. But the tubercular sputum is a source of infection, *the* source *par excellence*, beyond anything else, I believe. Of course, in a less degree it is very probable that, especially in the case of children, milk from tuberculous animals or tuberculous mothers is also a source of infection; but that is nothing at all to be compared with the careless spreading about of this expectoration as a source of this disease. Therefore, as I say, the care of this expectoration is the one thing that should be emphasized upon all of the laity, in order to prevent the spread of pulmonary tuberculosis, tubercular meningitis, or other forms of the disease.

The method by which that should be handled is spoken of here. Perhaps as easy a way as possible to destroy the sputum is to receive it upon paper, or, if the patients can secure them, in paper sputa cups, which will answer the purpose, and which can be obtained at a nominal cost, and to have these burned. Burning, of course, is a better method of destruction than boiling the handkerchiefs or other materials upon which this expectoration may be received; and therefore, if it be possible, I should advocate that method of destroying the sputum rather than boiling, and the exercise of a good deal of effort in order to secure that end, if it be a possible one.

Another point which has seemed to me to be a matter of a good deal of importance, and which I am very glad to have the opportunity to emphasize, is in relation to a microscopical examination for the diagnosis of the existence of the disease. As of course you all know, it is recognized to-day that the bacillus of tuberculosis may be found in the sputum before the physical signs of tuberculosis appear in a destructive process of the lungs. Now, it is exceedingly important that the method by which that diagnosis is made should be the proper one. I think it is unquestionable that what has been always heretofore spoken of as the pre-tubercular state in pulmonary tuberculosis is simply the time from the actual attack of the lung by the bacilli of tuberculosis until the time of the appearance of the physical signs in sufficiently extensive quantity to enable the ordinary examiner to make the diagnosis. Now, that is the important and critical time for the patient; and, if the diagnosis be made, and measures of climatic or other treatment be adopted, it will give a very possible, if not a probable, favorable result to

cases thus treated. Of that I am very certain. But, unless the proper method of microscopical examination be used, the diagnosis may be delayed anywhere from two to three or four weeks, because you all know that, if one examination of the sputum is made and that is negative, you do not make another for some time afterwards. From my experience, and that of gentlemen who are working with me, I should urge the twenty-four hour method, so called. It appears to take a little longer time; but it is a matter that seems to me ought to be emphasized in season and out of season that that is the proper method, and that no other is justifiable. It is, of course, justifiable to use one or two of the so-called shorter methods, and to be satisfied with those if you find the bacilli under the microscope at the first examination; but, if the result is negative, then you are not justified in concluding that tuberculosis is not present, and, in order to be so justified, you must use the longer and perhaps the slower method. That is a point I emphasize every chance I get; and, as you see, I have taken opportunity to do so here. I think it ought to be spoken of much more widely. So much for the practical part of the prevention.

I might occupy a long time in speaking of the theoretical part of what has been done, and what may be done, and what, it seems to me, it is safe to hope for. It is not necessary, of course, to speak of the rise and fall of tuberculine. Tuberculine was heralded as a panacea for tuberculosis, very foolishly as we all know now,—not only so, but more was claimed for it by those who did not know, than by those who did. Of course, in such a wide-spread disease the suggestion that there was a cure for it met with the most tremendous applause and wildest enthusiasm; but equally, of course, it was at the time, and always will be, absolutely impossible to produce anything that will ever reconstruct any part of the human body after it is destroyed, and much less such delicate tissue as the lung tissue. Therefore, in the first place, tuberculine was not given a fair chance for the reason that it was employed in the very large majority of cases after the disease had advanced too far for anything to do any special good; but in the second place, as you know, it has been used clinically at different times in this country. It is used by Trudeau; and within a year one of the prominent men in the West has said—I do not feel authorized to use his name, but this statement I understood him to make in Washington—that he uses it constantly in human beings, and, if he can secure his cases early enough, he makes the claim that he is successful in curing the majority of those cases. That, of course, I should pay very little attention to, excepting he is a man who has very good standing. It is constantly used abroad, as a recent report shows, and with very favorable results. But, as a matter of practical use, it has not been much employed clinically in this country until quite recently in the diagnosis of tuberculosis in cattle.

I had the pleasure of attending a meeting of the Massachusetts Veterinary Association some two months ago; and I confess I was not only surprised, but delighted to be present at such a meeting. The surprise part of it was to hear the absolutely unanimous statement in favor of tuberculine as a diagnostic agent of tuberculosis in cattle. Apparently it never fails. The properly prepared material will detect tuberculosis in its absolute inception. The only complaint that I ever heard of it among veterinarians is made jokingly, that it makes the diagnosis too early: they are induced to kill cattle before they are generally affected with tuberculosis, before they can do any harm. Of course, I do not agree with this. I do not think you can kill a tuberculous cow too soon. Tuberculine is an exceedingly delicate agent; and the fact that it is a diagnostic agent in cattle — contrasted with the fact that, so far as we can see, a large number of persons having tried it, it is not diagnostic as used in human beings — has suggested a speculation to me, which is an exceedingly interesting one, and with which I shall close what I have to say. I hope you will remember that it is purely a speculation, and that I have no special ground upon which to base it.

This fact of the contrast in its action in cattle and in man has led me to wonder, in connection with certain results that have been obtained by French observers, whether, after all, we have not to begin over again the old discussion as to the identity of tuberculosis in human beings with tuberculosis in the lower animals. The difference between the action of bacteria is influenced by such exceedingly slight, or apparently slight to our coarse perception, surroundings that it seems to me that it is possible this may have something behind it. The tuberculine which was sold and which is used comes in almost every instance from the bacilli of tuberculosis that are obtained from the lower animals, and not human beings. Therefore, we have this fact that seems to be demonstrated all over the world, that tuberculine used in cattle gives a perfect diagnostic agent; and whether it is a curative agent or not veterinarians have not yet told us. On the other hand, it does not have any effect in human beings apparently as a diagnostic agency. It is entirely uncertain. One says it will react, and another says it won't.

Now, certain French observers have demonstrated very conclusively very marked differences in the cultures of the bacilli of tuberculosis coming from different races of animals. They are apparently identical, and absolutely the same under the microscope, and yet one will kill out the other entirely. There is a radical difference between them that our means of observation has not yet enabled us to determine. Now, this is an exceedingly important point, and leads to the question whether, after all, instead of condemning tuberculine entirely, as the general medical profession has done, it may not be that we have all been on a false scent all this time, and

whether in using tuberculine we should not have been careful to see that the bacilli from which it came were derived from human beings, and not from the medium of the lower animals. (Applause.)

THE PRESIDENT.—There is another gentleman whom we welcome among us to-day, and I have the pleasure of introducing Dr. Vickery, of Boston.

REMARKS OF H. F. VICKERY, M.D.

Mr. President and Gentlemen,—Before I say anything upon this subject, I would like to express my satisfaction in being present here, and in having my enthusiasm stimulated by seeing so many men who are exerting themselves disinterestedly for the good of the State. It is a privilege to me, and I want to express as well as I can the esteem and respect that I have for this body to whose meeting I am invited.

The present awakening about tuberculosis is a matter in which I am deeply interested, and which fills me with a great deal of enthusiasm. Tuberculosis being so fatal a disease, and causing among the more unfortunate classes of humanity so great misery, it is a very welcome thought that we are on the threshold of a great diminution in the scourge, which it is; and I, for one, cherish the hope that the work which is being begun in this direction will, in the course of the next two or three generations, very greatly diminish the prevalence of tuberculosis. At present we are obliged to confess that, so far as the individual is concerned, the prophylaxis of tuberculosis lies in the maintenance of the individual health, the robustness of the constitution being preserved, in order that the ubiquitous germ of tuberculosis may not be allowed to grow when it enters the system; but, if what we now believe is true, and the efforts which we are to encourage are carried out persistently for a few generations, this omnipresent germ will no longer be ready to enter every weak human system, and the results of what we do now will be increasing in a geometrical ratio, not only for ten years or for twenty, but for fifty.

I once heard Sir Lyon Playfair say that one might sum up the theory of the public care of the health in what was said to the leper when he was told to wash and be clean, and the facts that come out about the tubercular bacillus illustrate again the truth of what Playfair said long before they were published.

One objection, which is commonly made to the efforts which I believe should be extended, is that we shall cause alarm in the community. Now, needless alarm should be deprecated; but, if we can throttle a disease which is killing from a seventh to a fifth of all who die, is it not well to excite the apprehensions of the public? I should be glad to do it every-

where I could. Abernethy left behind him a great reputation for his ability to manage his patients; and it was said of him that the two factors which he used were fear and encouragement, and that is precisely what we can use. If we held up the terror, and gave no hope of escape, we might be doing wrong; but in the terror lies safety, and that is what makes me feel that we are entirely justified in publishing these facts with considerable earnestness and rapidity.

As Dr. Chapin was speaking, there came to my mind a young girl to whom I was called as she was dying of tuberculosis. She was one of eight sisters, six of whom had already died of that disease. A year later the eighth sister, the seventh having meanwhile died, came to me with rapid tuberculosis already existing in the lungs; and at home in Nova Scotia was a father who had coughed all his life, and for all I know may be coughing now. He had begotten and killed his offspring.

I meant to find the exact reference to a letter that I read in the *Lancet* in the spring of this year. It can be easily found. A British physician had a family who, not being tuberculous, had moved into a house which had previously been occupied by persons who had consumption; and this new family developed the disease. He investigated the condition of the house. In one specimen, which he obtained from the top of the dining-room door, there were three colonies of tubercle bacilli.

From a purely scientific point of view I believe that what Dr. Ernst has said about the microscopic diagnosis of tubercular bacilli in sputum is correct, but my actual experience is that in almost every case where I examine the sputum I can either find the bacillus in the course of ten minutes from the time I begin or else I cannot find it ever.

Now, in an important case, a doubtful case, I should certainly resort to the long method of examination. That is twenty-four hours; but, frequently of late, I have had patients come from distant places to my office, heard their history, examined the chest, had them cough (perhaps incidentally) while they were there, and spit into a sterilized vessel, and made the diagnosis of tubercle bacilli, actually seen the bacilli, and all in the course of not a long office visit. Now, a method which is capable of reaching a practical and positive result in ten minutes is worth learning. It is easier for me to use that first, and then, if I fail, to go on to the other, than it is invariably to use the other; and it is a great deal of satisfaction to the patients who come from a distance to me, whom I never see again, and who want to know while they are there what my opinion is. So I shall not abandon that method, although, as I say, I agree from a purely scientific and accurate point of view with what has been said. That covers everything that I have to say. (Applause.)

THE PRESIDENT.—The subject is now open for general discussion; and I shall take the liberty of asking, among others, Dr. Norton, of Everett, to say something to us on the subject.

REMARKS OF J. S. NORTON, M.D.

Mr. President and Members of the Association,—I have the pleasure of living in one of the most rapidly growing cities in the Commonwealth. The population has recently doubled during one period of five years, so you see that the houses must necessarily be mostly new houses; and at the end of last year it occurred to me that perhaps tuberculosis did not breed in those new houses. Therefore, I looked over the figures; and, as I have a copy of our report, I will take just a minute, and read a few words:—

“Our death-rate from tubercular diseases (including consumption) was 2.18 per thousand in 1893. The previous year it was 2.53 per thousand. Boston’s rate for that year (1892) was 3.98 per thousand. Since we cannot tell whether a physician giving ‘tuberculosis’ as the cause of a death means tuberculosis of the lungs or the disease in some other form, we have taken the total deaths from all tubercular diseases in computing the above rates. If we consider only those returned as due to ‘phthisis’ in both cities, we find the rate in Everett for the year 1892 was 2.13 per thousand, while in Boston it was 3.01. For 1893 in Everett the rate was only 1.62 per thousand.”

Now, of course, I wrote that for popular instruction of as many citizens as might happen to read it, using the word “consumption” in the way it is generally taken, meaning consumption of the lungs. I did not, in making the figures, include convulsions, as Dr. Chapin has done, for this reason: that in the summer months in Everett we have a number of cases of deaths where the return is made “convulsions.” I have had occasion to see some of those children before they died, and heard the history from the parents; and it was my private opinion that some of those that were returned as convulsions were cases of cholera infantum, and possibly some physicians not liking to acknowledge the loss of cases of cholera infantum had called it convulsions.

A great many of the cases of consumption that died in Everett, to my personal knowledge, acquired the disease before they came to Everett. They came to Everett coughing, and would give a history of being sick when they came to the city. About a month ago a case came that in all probability acquired the disease in Boston, and I sent her back to Boston. (Laughter.)

I have now under way some circulars that I am going to send to the different physicians in Everett, and possibly undertakers, and get as complete a history as I possibly can of cases of tuberculosis, *to see if almost*

every case did not originate out of town. (Renewed laughter.) Perhaps I cannot send them all back to Boston, if they did originate in Boston; but it will be interesting to me, and I have no doubt it will be interesting to all the gentlemen, if I find that in a city where nearly all the houses have been built within a few years almost no cases of tuberculosis started in those new houses.

We also have begun recently, at the request of one or two of the physicians there, to fumigate with sulphur houses where a member of the family has died or is sick with tuberculosis. I do not know how much good that is going to accomplish, but at the request of one or two of the physicians we have begun to do it. Whether the sulphur fumigation will have much effect on the bacilli of tuberculosis I do not know. Perhaps that question I will leave open to some one here who is better informed; and next year or possibly at the next meeting, after I have a few more figures from the doctors in response to the circulars that I intend to send out in reference to where the sick ones acquired or are supposed to have acquired the disease, I may have something further to say in reference to the matter. (Applause.)

THE PRESIDENT.—Dr. Sawyer, I would like to hear something from you on this subject. (Applause.)

REMARKS OF E. A. SAWYER, M.D.

Mr. President and Gentlemen,—Although I am very much interested in this subject, and have been much interested indeed, I have prepared nothing to bring before you to-day. I think the subject is a very important one, and well worth the consideration of this body,—not only of our consideration, but some action possibly should be taken in regard to the matter.

When I was in college, I was quite a frequent visitor at the home of Dr. Alfred Loomis, of New York, who, as he was quite a friend of my father, a physician, took some interest in me; and we had some interesting discussions together. He at one time made the remark to me that, as progressed in the practice of medicine, I would find that consumption was contagious and infectious. I think at the time I paid very little attention to the statement; but soon after I began practising medicine I was called into a family where a member of it had died recently from consumption, and another member was in the first stages. After making some attempts to stop the progress of the disease, I called in another practitioner who had been in the practice of medicine some thirty-five years; and, after examining the case with me, he informed me that he had had a case a few years previously die of consumption in the same house, and also said to me that con-

sumption was contagious. I then became still more interested in the matter, and investigated quite carefully the history of the house, and found that this patient of the older practitioner whom I called in was sick in the same room in which this one was sick upon whom I was attending; and that the patient who previously occupied this room, in spite of all the other physician could do, would expectorate upon the floor, chairs, or anywhere that happened to be convenient. This was some twelve years ago; and at that time I had the room thoroughly fumigated with sulphur and disinfected with bi-chloride, and have kept track of the house since then. The former buyer moved out, although the patient died; but since that time there has never been another case of consumption in the house.

I hardly think this would be an answer to the question of the gentleman from Everett, but it is simply an experience I had, and caused my youthful mind to become thoroughly impressed with what the older physicians told me about the contagiousness of consumption. And from that time up to the present I have thoroughly believed that it is so.

I could mention several other instances where I have had personal observation of the fact of the contagiousness of this disease; and I also believe that there is a considerable connection between consumption and meningeal troubles, as has been so ably spoken of by Dr. Chapin, and that, as we lessen the vigor of consumption in its progress, so we shall also lessen meningeal troubles in children. We have had quite a good many that I have followed the history of come into our place coughing; but we could not readily send them back to the place where they came from, and so I, with the assistance of my other colleagues, have put them where they are still coffin. (Applause.)

THE PRESIDENT.—Gentlemen, we are prepared to hear any volunteers upon this matter. Certainly, every man here has had some useful experience with this most fatal disease that boards of health have to deal with, and I hope we shall hear from a number of gentlemen.

REMARKS OF J. A. GAGE, A.M., M.D.

Mr. President,—One point suggested by Dr. Chapin in regard to incorrect diagnoses I quite agree with. I remember a child dying from tubercular meningitis contracted from cow's milk, where one of the older physicians, a skilful diagnostician, thought it something else; and quite recently I have seen a diagnosis of syphilis made, where the whole history of the family and the child was tuberculous, and where the child died, I believe, from tuberculosis, so that I quite agree with Dr. Chapin that the diagnosis is often incorrectly made. While coming down in the boat to-day, I was led

to say, in conversation, that I should be very glad to indorse every word that Dr. Ernst might say in regard to tuberculosis; and yet I find in my mind one doubt, and I am sure he will accept the statement from one who is always ready to learn from him. Dr. Chapin said that children only "inherited" the disease when tubercular pus was being excreted in the house, and Dr. Ernst said that he did not believe it was inherited. I have in mind the history of one family where the grandmother was tuberculous (she is sixty-five or sixty-six years of age), and has been tuberculous ever since I knew her; and, of three children, I know that two of them are tuberculous. One, the mother, has signs of solidification in one lung; but she has never had any very active symptoms of the disease. She has never had a continuous cough or expectoration, to my knowledge, and always has enjoyed good health; that is, has always been able to do her work, and has been under my observation ever since she was a child. Her husband also has a good history, and no signs of tuberculosis. The family that I speak of—that is, the mother of the child and the father—after marriage, before this child was born, moved into a new house, and furnished it anew. I delivered the mother of the male child in question. The mother does not expectorate, and particularly during this period she had no signs referable to the lungs. The family lived by themselves. Within four or five months that child developed one lung with signs of solidification, and, although recovering from the attack, has had ever since what we call râles present, and signs of solidification there still, with general wasting. I thoroughly believe it is tuberculosis. I have no reason to doubt it. I might also say the other child has lung signs.

The question has come to my mind, Is not this disease sometimes inherited? And what has led me to it has been the observation of a number of cases of this kind where the disease has appeared very early in children where, so far as I could find out, there was no active excretion of pus going on, as Dr. Chapin has said. I speak of this more particularly now because it seems well to have this point of view before our minds while we are considering (what I believe to be true) that infection and often secondary infection are *par excellence* the methods of propagation of the disease; and it seems to me it is wise not to lose sight of the fact that it may be inherited, and I believe it is not scientifically disputed in relation to this point.

I have a patient in mind now who has solidification of one lung, and a tuberculosis nodule on one cheek (removed), afterwards tuberculosis of scapula; and she is now under treatment for lupus of the lips and nose. That patient has tuberculosis in her body; and, if she became a mother, she could, I believe, transmit those germs to the child she was carrying.

I merely offer this suggestion, and I will say I am taking very careful

notice of my new-born babies for the purpose of finding any indications of tuberculosis during the first month of life.

There is one other point I wish to speak of, which is of interest to boards of health, that was suggested by Dr. Vickery's remark, whether it was not advisable to create what is called a "needless" alarm among the people. The grandmother I have just spoken of, the woman who is living at sixty-five years of age, has been tuberculous, to my knowledge, at least twenty years, and I have no doubt has been the greater part of her life.

I have under my observation children of all ages, from eight or ten years to twenty odd, that have signs of tuberculosis. They have signs of solidification of one lung. Those children are healthy and active children; they are ruddy-cheeked; they are full of life and activity, and take an active part in the life that all children take part in. Now, how are we going to deal with such people who are tuberculous, but who are active in regard to prevention? If I go to those children or their parents, and particularly the older children that are eighteen or twenty years old, and say: "You are tuberculous and have consumption. You are liable to transmit that to others," it seems to me that, with the great prevalence of this disease, it is a terrible statement to make to an individual. They cannot see the scientific side of it and the possibility of it that the doctor can, and it puts a blight upon their lives.

Now, I am as strenuous as any one in enforcing sanitary laws, in doing all we can to improve the condition of the community; but I think we have got to consider very carefully how far we should go with these patients. I have no doubt some of these are going to have children, and die of old age; and how far are we going to hold over them that statement that they have consumption? And yet these children, when they catch cold, as they call it, have a high fever, with loss of appetite, go to bed, lose flesh, and have all the signs of something more than a common cold; and at such times they expectorate a little. Then I always look out for that expectoration, if I am the doctor; but I cannot tell those young people that they have consumption. It seems to me it is a tremendous blight to put upon the lives of young people who are full of hope, and have no practical knowledge that they are sick.

I was very glad in reading the discussion on the question as to how far boards of health should go in this matter to see that particularly in Philadelphia and in Boston they were conservative. It seems to me that in New York they have gone too far; and I hope that what measures are taken will be taken not only with reference to the protection of the community, but with proper regard for the individual life we are affecting.

THE PRESIDENT.—Is there anything else to be said upon this subject? If not, probably Dr. Chapin will have something to say in closing the discussion.

DR. CHAPIN.—I have not anything to say in general, but I would like to say something about the cruelty of telling a person who is tubercular that he is tubercular. I speak with some feeling on the subject, because my father and grandfather and five aunts died from consumption (laughter), and I am one who inherits consumption. From my youth it had been told me: "You have it. You can't help it. Your father had it. Your grandfather had it. Look at your aunt's case; and what is to be done with you?" There was no hope until a few years ago somebody said tuberculosis was infectious; and then, if infectious, you have got to catch it. I began to ask myself: "Have you got it? Why, no, I have not got it. Is there anybody living now in your family who has it? No, they are all dead; and I can't get it." (Applause.) And I say, if you can go to a family, and say, "Although one person has it, the rest of you can escape it," that is good for the family.

DR. ERNST.—Mr. President, one word about my belief that the disease is not hereditary. Of course, it is a possibility that a very tuberculous mother may transmit tuberculosis through the placenta; but I am firm in the belief that otherwise the occurrence of tuberculosis by means of heredity is exceedingly rare, if it ever occurs. When I was a student, I was taught that all chronic destructive processes of the lungs were not tuberculosis, but were chronic catarrhal pneumonia. Very soon after the discovery of the bacillus of tuberculosis the term "chronic catarrhal pneumonia" died out entirely. I think Dr. Vickery will bear me out in the assertion that it is coming into very general use again, or any of the other physicians at the Massachusetts General Hospital, of whom I am one. I think their experience at the Massachusetts Hospital must be about the same as mine, and must recognize the existence of a considerable number of cases of solidification in which probably destructive processes are going on in the lungs that are not tubercular at all. Is not that right?

DR. VICKERY.—Yes, sir.

DR. ERNST.—They do not go on to a fatal result. Now, that is the point. We are discussing this question from a scientific point of view. These cases may be what is called tuberculous, but they are not tuberculosis; and I think that is a distinction that should be borne in mind, and I am speaking of tuberculosis and the bacilli of tuberculosis not being hereditary, and not being propagated by heredity.

DR. VICKERY.—If a man's house has caught fire, for heaven's sake tell him before it is burned down; and, if there is only one member of the family sick and the others can be saved, let them know it. To be fore-

warned is to be forearmed. If there is one sick, and it is evident that the others will inevitably get the disease and die, I think perhaps it would be cruel to tell them that they are going to catch it; but, as long as there is hope for them, then the question is whether it is not kinder and better to let them know.

DR. ERNST.—There is one further point in regard to what Dr. Gage said, that we do not acknowledge in the examination of any patient or any material the existence of tuberculosis unless we find the bacilli. It is very common, in speaking of tuberculous cases, to speak of them all as tuberculosis; and, so far as we have been able to find out, they have no evidence of tuberculosis. The scientific evidence is the discovery of the bacilli, and nothing else. In speaking on a question like this, we must stick closely to scientific exactness; and I believe that in all cases where evidence of tuberculosis is sought we must make a microscopical examination first and foremost and always. Then we may draw any conclusions in regard to it which such an examination seems to warrant.

DR. GAGE.—I can merely say that, of course, these cases have not all been scientifically determined. I recognize in the case of children where you do not get expectoration it is very difficult; and my experience has been that quite a large number of my patients with lung symptoms, with unmistakable signs of solidification of the apices, do not expectorate. I would like to ask Dr. Vickery what he would do if he was called to a family where three children out of four had signs of solidification at an apex, and were disposed to "catch cold" easily, but who, in other respects, were healthy, and leading active lives. They are not expectorating tuberculous pus, and are not aware that they are diseased. Would he tell those who were ignorant of any sickness that they had a life-long disease? What would he feel was his duty in such a case?

DR. VICKERY.—Well, my custom is to be very frank, and tell the family my diagnosis and the means that should be taken to endeavor to cure the disease and prevent its spread; and I assure them, believing it myself, that it is a curable disease, that the old view of its incurability dates from a time when the diagnosis could not be made so early, and that, if the individual who is diseased is careful about the sputum, in case he gets better he will avoid reinfection from his own sputum. Here is a man who has just had the disease. Perhaps he has killed out that lot of germs which had got into him, and at that minute he has breathed in some more, and he is in a state to make a second colony settle. I tell him and his family, and I do not find that they feel badly about it. Some of them have thanked me with tears in their eyes, and one said, "Doctor, if only I had learned this a year ago, I would have acted very differently." They do not seem despondent, if it is told them with sympathy and kindness; and then, if it

were going to save ninety-nine, and one single man had his feelings hurt, as I say, I would not hesitate.

REMARKS OF S. W. ABBOTT, M.D.

I have here some circulars upon tuberculosis that have been referred to, for the benefit of physicians and boards of health generally, and a smaller card which should be put into families where there is consumption. Dr. Chapin's remarks are very important in reference to the method in which he has conducted his examination. That is to say, a physician who has been brought up in a community has a knowledge of all the families and their history, and can make observations and an exact record of them extending over a long period of time. I trust that these observations may be continued, because they certainly have a great deal of value in settling some of the doubtful points relating to tuberculosis in families.

Some remarks have been made concerning the city of Boston and its death-rate as compared with that of other cities. Certain considerations ought to be kept in mind in regard to the character of the population as to its effect upon the death-rate. I have made a study of all the cities and towns in this State, and published the results a year or two ago; and some of these points were brought out there, giving the reason why certain cities had a high death-rate from certain diseases. Boston stands at the head of all the cities in its death-rate from consumption, Holyoke, Lawrence, and Lowell in typhoid fever, Holyoke in small-pox, and Fall River in cholera infantum.* Now, there are definite reasons for these high death-rates from special causes. Boston has within its limits a large number of institutions to which people come and die who are not residents of Boston, and their deaths are credited to its death-rate for phthisis. There are quite a number of hospitals in Boston where people occasionally die of consumption, who, perhaps, are not admitted as suffering with that disease; and there are other institutions which are specially devoted to it, such as the House of the Good Samaritan, the Channing Home, St. Elizabeth's Hospital, Dr. Cullis's Home, and the Carney Hospital, all of which admit consumptives. Then there are other conditions in the city favorable to tuberculosis. There is a very large tenement-house population in Boston. The city of Newton, on the other hand, is the very lowest among the cities in its general death-rate, 13 or 14, where Boston has 23 or 24. Then, too, the population of Newton is very different from that of Boston. It has mostly a wealthy population, with comparatively very few poor and very few who live in tenement houses,—a very small manufacturing population as compared with that of other places. All these things influence the death-rate

* See Twenty-third Annual Report of State Board of Health, 1891, p. 759, etc.

in cities. In Fall River there is a large number of mill families who work in the mills; and there you have a death rate from cholera infantum 50 per cent. higher than that of Boston from the same cause, because the mothers of infants practise early weaning, so as to allow the mothers to resume work in the mills.

Now, the city of Everett, as we know, has an entirely different population from that of Boston. It is a residential place, with almost no manufacturing there, and a new class of houses that must have, as Dr. Norton has stated, a definite influence, while the old houses would be more likely to favor the retention of the infectious material of consumption.

Then there is another point worthy of mention, and that is the construction of the house itself. I do not mean the walls, but the floor. The floor of a house is the part where the sputa lodge, if they lodge anywhere, since many people spit upon the floor. Now, with a hard floor, with tight joints, well polished and clean, consumption is far less likely to appear in that house than it is in one having old rickety floors, with wide, open joints, and a floor that has been worn out and battered to pieces, which is far more likely to retain consumptive sputa.

There is another practice (which has been proposed in some places), and that is the quarantining of consumptives. It seems to me that is going too far. If you quarantine all consumptives, you must quarantine a large part of the population,—so large, in fact, that it would be impracticable.

DR. NORTON.—I would like to call the attention of the gentlemen present to how easy it is to get a diagnosis when we are a little bit lazy or for any other reason we do not feel confident that our physical examinations give us sufficient data. I get in Boston a wooden bottle (mailing case) and a glass inside bottle having a wide mouth, which I give to a patient to expectorate into; and then I mail the bottle to Dr. Stone at the Harvard bacteriological laboratory, sending a small fee with it, and get an answer in three days. I thought I would call attention to this method, that all might know how easy it is to get your work done for you, and get it done well. In all the work that Dr. Stone has done for me I find the result seems to prove that the examination was correct. I would like to urge upon the members who are physicians the importance of making a diagnosis just as early as possible on account of the patient and on account of the family.

THE PRESIDENT.—If there is nothing more to be said upon this subject, the chair will be happy to entertain a motion to adjourn.

The meeting was then adjourned.

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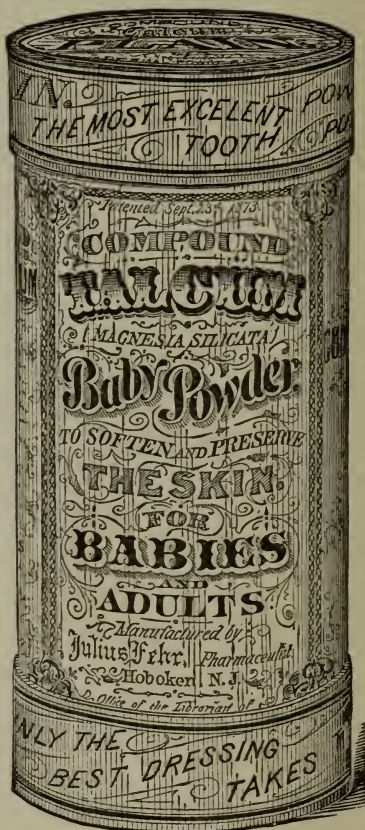
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Was organized in Boston, Mass., on March 19, 1890, with the following objects: the advancement of sanitary science in the State of Massachusetts; the promotion of better organization and co-operation in the local Boards of Health; the uniform enforcement of sanitary laws and regulations; and the establishment of pleasant social relations among the members of the Association.

All persons holding appointments as members of a Board of Health in a Massachusetts city or town, the executive officers of such a local board, and the members of the State Board of Health, and such other persons as may be elected, are eligible to membership. The annual dues are three dollars.

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THE OFFICIAL JOURNAL OF THE ASSOCIATION

Is a quarterly publication, containing the papers read at the meetings, together with verbatim reports of the discussion. It will also contain from time to time interesting contributions from writers of the highest standing in their profession. It affords a convenient medium for the interchange of information and experience between its members, who are so widely separated as to find frequent meetings an impossibility. Every addition to its subscription list, therefore, is a material aid in extending its sphere of usefulness. All members of the Association receive the *Journal* in return for their annual dues. To all others the subscription is one dollar per annum in advance. If upon inspection of the accompanying copy you feel so inclined, we should be glad to receive your subscription. The *Journal* will also be sent to the principal hospitals, school boards, doctors, architects, and boards of health.

NOTES.

AUTOMATIC DISINFECTION.

The disinfecting appliances lately placed in the new Union Station (Boston) are deserving of notice. The toilet-rooms in which they are placed are visited daily by thousands of people of every degree of cleanliness. They are fitted up

with the latest and best plumbing, and are cared for by efficient attendants. Still, noxious air was ever present; and it became necessary to employ some system of disinfection.

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1894

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The JOURNAL will present, from quarter to quarter, a fair and adequate picture of the progress of practical sanitary science as applied to the needs of a modern community. The various subjects which are reviewed in the quarterly meetings of the Association are treated by experts qualified to speak from daily experience in Public Health offices, who, as men of science, are careful to be scientific and comprehensive, and who, as public officers, are no less careful to speak pertinently and so as to be easily intelligible to the layman.

The JOURNAL, in a word, appeals to all whose interests touch the questions of sanitation and hygiene,—to the architect, the school-committee-man, the manufacturer, the contractor, and, above all, to the busy practitioner who has no time for any reading but what is brief and to the point.

The subscription price of the JOURNAL is one dollar a year, payable in advance. Single numbers, twenty-five cents. It is on sale at the Old Corner Bookstore, Boston.

All communications to the Association should be addressed to the Secretary, Lemuel F. Woodward, M.D., Worcester, Mass.

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MASSACHUSETTS ASSOCIATION OF BOARDS OF HEALTH.

Organized 1890.

[This Association as a body is not responsible for statements or opinions of any of its members.]

VOL. IV.

January, 1895.

No. 4

OCTOBER QUARTERLY MEETING

OF THE

Massachusetts Association of Boards of Health.

The quarterly meeting of the Massachusetts Association of Boards of Health was held in Cambridge on the afternoon of Thursday, October 25, 1894, the Vice-President, S. H. Durgin, M.D., presiding.

THE VICE-PRESIDENT.—The Association is complimented this afternoon by the presence of the chief executive officer of Cambridge, and it gives me pleasure to introduce to you his Honor, Mayor Bancroft.

HON. WILLIAM A. BANCROFT, of Cambridge.—I value the opportunity of standing a moment before you, and of speaking a word of pleasure because you have determined to meet within the borders of this city, and also a word in appreciation of the work in which you find yourselves engaged. I speak with respect, I speak with reverence, if that is a proper term to use, if that is a proper attitude for one man to take toward others, when I consider what you are about. I do not know of any duties that are performed in our midst which indicate more of a public spirit, more devotion to the public welfare, than are the duties which are performed in connection with the health of the community.

I address, I understand, gentlemen of professional attainments; but there are others, laymen, who have devoted themselves to this work. I know

something of the perplexities, I know something of its care, I know something of the delicacy of the problem in which you exercise the police power with which you are entrusted. I have thought of the very great progress which our community has made in this matter of sanitation. It is the change of conditions from the open country, with here and there a farmhouse, to the crowded city, which has made necessary work such as you have done and are doing. It is not dirt scattered, it is dirt concentrated, it is accumulation of dirt which makes boards of health necessary. I have thought how fine it would be if the community were educated to a point which you, gentlemen, have reached. I have the matter of cleanliness forcibly brought to my attention as a member of the militia force of the city. It seems to me that there was not the attention paid to it once that there is now. I can well remember that we regarded it as an interference if one of the medical officers made an effort to have our quarters kept clean.

I see you have put barrels in your streets, so that the people will not throw paper and waste in the streets. I have seen barrels in Watertown and in the city of Newton. This is an indication that the people are beginning to realize the importance of keeping clean in a general sense and in every sense. You cannot get very much ahead of the sentiment of the community, but it is indispensable to keep clean, and the people are beginning to realize it.

I speak in hearty appreciation of what you do because I know what is done here in Cambridge by our own Board of Health. Some of you gentlemen have made it your life-work, and are in a situation to receive compensation for it: but others serve and serve freely for the love of what you are doing.

I thank you sincerely for the opportunity which you have given me of meeting you.

The reports of the last meeting were read and accepted.

The Executive Committee reported that they had considered and respectfully presented to the Association the following names for election to membership:—

F. H. BAKER, M.D., Worcester. H. W. CRONIN, M.D., Millbury

The above-named gentlemen were then duly elected to membership in the Association.

The regular business of the afternoon was then taken up, commencing with a paper on "Death Certificates" by Dr. Wm. V. Fox of the Taunton Board of Health.

DEATH CERTIFICATES.

REMARKS OF DR. WM. Y. FOX, OF TAUNTON.

Mr. President and Gentlemen,—During the discussion on tuberculosis at our last meeting some use was made of the vital statistics of Springfield, and I noticed that Doctor Chapin classed convulsions and brain diseases among children as tuberculosis. I agree with him that a large number of the deaths recorded as due to convulsions and brain disease are really due to tuberculosis; and such causes of death as marasmus, asthenia, and debility in children might perhaps be added with equal reason.

Now, the very fact that such a classification as this is necessary shows that our statistics, as far as they are dependent upon physicians' certificates, are unreliable.

Statistics, to be of value, should give us facts. That they do not do so in regard to cause of death is well known to all of us who see the certificates of death as they come to the offices of boards of health. A number of certificates are filled out with death assigned to a very indefinite cause or a condition rather than a disease, while in others a single symptom is given; *e.g.*, dropsy. As you very well know, dropsy may be a symptom of valvular disease of the heart, of cancer in various parts, of disease of the kidneys, and of several other diseases. Therefore, when we find dropsy put down as the cause of death, we are just as ignorant of the actual disease as if no certificate had been given.

I have gone over the records of Taunton for the last five years, and find the following "causes of death," which, in my opinion, do not give the information which they should in order to be of value,—in fact, do not give the actual cause at all: albuminuria, ascites, asthenia, cardiac exhaustion, catarrh suffocation, childbirth, colic, coma, congestion of brain, congestion of lungs, congestion of kidneys, continued fever, convulsions, debility, dentition, diarrhœa, disease of brain, disease of pylorus, heart failure, inanition, internal convulsions, jaundice, marasmus, motility, natural causes, œdema of lungs, old age, shock, syncope, tumor.

In 1889, $21\frac{1}{2}\%$ of the certificates were in this list; in 1890, 22% ; in 1891, $21\frac{1}{2}\%$; 1892, $21\frac{1}{2}\%$; 1893, 22% .

This seemed to me a very large percentage of worthless certificates, and I have looked over a few annual reports which happened to be on my desk to see if Taunton physicians are any more lax than physicians in other places; and the result is as follows: in 1893, Haverhill had 14% of worthless certificates; Worcester, 12% ; Woburn, 15% ; Lawrence, 18% ; Newton, 11% ; Marlboro, 14% ; and New Bedford, 19% .

You may say that I have included some causes in this list that are legiti-

mate ones, but my test is this: "Of what disease did this person die?" If the certificate fails to answer that question, it is of no value whatever. Take, for instance, the term congestion of the lungs. What disease is that? Probably, in most cases, it means pneumonia; but it may mean passive congestion from any one of several causes, and, I know, it has been used in some cases of consumption.

Now, what is the reason we are getting so many of this kind of certificates? Are they given by ignorant practitioners? Of course, a few are; but the majority are given by physicians who are competent to make a diagnosis, and ought to be able to make a certificate which would mean something. Then why don't they do so? Well, in a few instances, I have known the real cause to be suppressed out of regard for the family of the deceased. In case death was the result of syphilis, we can well understand such delicacy. But why should it exist in cases of cancer or consumption?

A still more important factor is carelessness. The physician very probably looks upon the matter simply as an irksome duty, and, knowing that the Board of Health must accept his certificate, no matter what it contains, puts in a symptom which his patient had, and lets it go at that.

Then, again, many times it happens that the physician has not seen enough of the patient and his disease to make an accurate diagnosis. The law says, "A physician who has attended a person during his last illness shall furnish a certificate," etc. He may only have seen the patient once, and that when he was dying. Nevertheless, he is compelled to certify the cause of death. Naturally, as he has not made a diagnosis, he gives some general term, as debility or heart failure. Or, possibly, the last illness is a long one, and the physician sees the patient at long intervals, and, perhaps, not for weeks previous to death. He may have forgotten all about the case, still he is obliged to certify. In fact, the physician who has attended a person during his last illness must certify the cause of death, whether he knows it or not, unless he can shift it onto the medical examiner by saying he supposes the deceased came to his death by violence.

Then, too, there are a good many times when the undertaker finds that there has been no attending physician, and calls on the chairman of the Board of Health, or some physician employed by the city or town for that purpose, as provided by law. How can such chairman or physician get at the cause of death? Get all the facts he can from the family of the deceased, and then guess. He may guess right, and probably does, sometimes. Such cases oftenest occur among ignorant people, frequently foreigners who know little English; and, if any one can tell me how to make an accurate *post-mortem* diagnosis under such circumstances, I shall be glad to learn.

When I honestly can, I suppose death is due to violence, in such cases, and send the medical examiner; but he is not much better off. He cannot

make an autopsy without authority from the district attorney or mayor, which is only given where the suspicion of foul play or violence is quite strong.

Previous to 1883 the city clerk issued burial permits. In that year the law was changed, and permits have since been issued by the Board of Health. I do not know why that change was made,—probably some here to-day can tell us,—but suppose there was some idea of making an improvement in the death returns. If such was the intention, I believe the law is a failure; nor do I see how it could well be otherwise.

The law says, "No permit shall be issued until a satisfactory written statement containing the required facts, together with the certificate of the attending physician, has been received." That is to say, the undertaker's return must be satisfactory to the Board of Health, but any certificate of any physician must be accepted; and, as any person who chooses to sign himself a physician has as much legal right to do so as the best educated physician in the State, it is difficult to see how boards of health have any control over certificates anyhow. I presume, after the medical registration act is in full force, we can refuse certificates from all but registered physicians.

It is all very easy to find fault, and say this condition of things is wrong, and ought to be remedied; but it is not so easy to suggest the remedy, and, unless we can do so, this discussion to-day will be fruitless.

I sincerely hope some one here will be able to tell us what this Association ought to do about it; for I frankly confess that only two methods suggest themselves to me, both of which have serious drawbacks. However, I will give them for what they are worth. One is talk, and the other is law. By talk I mean that this Association should use its influence on the medical profession through the different medical societies and medical schools, through the medical and popular press, and through individual efforts, to induce physicians to make more accurate certificates.

The law should require the physician's certificate to state a definite disease, unless death is due to violence, accident, or poisoning, and should require it to be satisfactory to the Board of Health. In case no such satisfactory certificate is given, the medical examiner should be required to certify; and, if he cannot make a positive diagnosis in any other way, he should be empowered and required to make an autopsy.

Such a law would not only give us more accurate vital statistics, but would be an additional safeguard against the covering up of deaths from contagious diseases, or from criminal abortions, or from foul play, and would also have a tendency to prevent the criminal neglect of young children, which is too often the real cause of death.

On these grounds I believe this Association would be justified in using its influence to obtain such legislation as I have suggested.

REMARKS OF S. W. ABBOTT, M.D.

I do not think, Mr. President and gentlemen, that the importance of this subject, the value of a certificate of death, is sufficiently appreciated.

The certificate of death contains several items of variable importance. I have one here, which I will pass around. It consists of two parts, the physician's certificate, and the undertaker's. The principal fact stated in the former is usually incorporated in the latter as Item 6, together with the name of the certifying physician.

Upon the back of each of these forms is printed an extract from the laws relating to this subject.

There are three objects to be secured by the certificate of death :—

1. A record of the death, which can be found at any future time, and which may prove valuable to the survivors of the deceased, in settling questions of importance relative to the disposal of property, life insurance, pensions, etc.

2. The certificate of death may occasionally play an important part in the detection and prevention of crime.

3. The certificate of death is of the utmost importance to all persons engaged in public health administration.

An accurate knowledge of mortality statistics forms the basis of sanitary science. The certificate of death may properly be termed the unit of mortality statistics. In itself a single certificate has but little value for this purpose, but the aggregation or grouping of large numbers of such certificates gives us results of very great value.

The following facts may be obtained by the systematic grouping of such certificates.

1. The total number of the certificates in a given community, whether it be a country, State, city, town, county, or public institution, gives us the total deaths from which the death-rate or ratio of the deaths to the living population may be estimated.

2. From the facts obtained in Item 1 we obtain the mortality by seasons.

3. The grouping of the facts gathered in Item 3 gives the mortality of the sexes.

4. From those presented in Item 5 we have the mortality by ages, which may be separated conveniently into groups, or five and ten year periods of life.

5. In Item 6 we find the facts which are of the greatest interest to us as students of hygiene, the cause of death. By combining the facts in Item 6 with those of Item 1, 3, 4, or 5, we may obtain the relation of different diseases or causes of death to season, sex, color, and age.

6. In other items, 7, 9, 13, and 14, we find an opportunity to note the

PHYSICIAN'S CERTIFICATE.

Name of Deceased*
 Date and Place of Death . . . died at 189
 Disease or Cause of Death . . of Duration of Sickness

I certify that the above is true to the best of my knowledge and belief.

Name and Residence of Certifying Physician,.....
Date of Certificate,.....

* Or Sex of Infant (not named).

UNDERTAKER'S CERTIFICATE.

COMMONWEALTH OF MASSACHUSETTS.

No.

RETURN OF A DEATH.

To the Clerk of the Town in which the Death occurred.

- | | | | |
|---|-----------------|---------------|------------|
| 1. Date of Death . . . . . | ..... | ..... | ..... |
| 2. Name . . . . . | ..... | ..... | ..... |
| (Maiden Name)* . . . . . | ..... | ..... | ..... |
| 3. Sex, and whether single, married, or widowed . . . . . | ..... | ..... | ..... |
| 4. Color † . . . . . | ..... | ..... | ..... |
| 5. Age | Years, .. | Months, | Days |
| { Disease or Cause of Death . . . . . | ..... | ..... | ..... |
| 6. { Duration of Sickness . . . . . | ..... | ..... | ..... |
| { By whom certified . . . . . | ..... | ..... | ..... |
| 7. Residence . . . . . | ..... | ..... | ..... |
| 8. Place of Death . . . . . | ..... | ..... | ..... |
| 9. Occupation . . . . . | ..... | ..... | ..... |
| 10. Place of Birth . . . . . | ..... | ..... | ..... |
| 11. Name of Father . . . . . | ..... | ..... | ..... |
| 12. Name of Mother . . . . . | ..... | ..... | ..... |
| 13. Birthplace of Father . . . . . | ..... | ..... | ..... |
| 14. Birthplace of Mother . . . . . | ..... | ..... | ..... |
| 15. Place of Interment . . . . . | ..... | ..... | ..... |

*Signature of undertaker or other
person making the return.*

DATED at....., on 189

* If a Married Woman or Widow.

† If other than white. (M) Mulatto. (I.) Indian. If of other Races, specify what.

[Be very particular to fill all Blanks.]

relation of residence (including climatic conditions), occupation, and parentage or race to disease or cause of death.

The relation of occupations to disease and duration of human life is not so easily determined in this country as elsewhere, partly in consequence of the shifting character of the population and the instability of occupations, and partly in consequence of the faulty methods hitherto employed in interpreting the statistics of occupations.

This whole subject of Death Certificates has been considered of so great importance in England as to awaken the attention of the British Parliament; and an investigation has been made by them upon the subject, which has resulted in this recent report from which I will read a few extracts.

One of the chief points taken up in this report is the prevention of crime: and a decided advantage in this direction would be gained by the appointment of a medical officer in every city or district of 20,000 inhabitants, whose duty it should be to investigate every case of "uncertified death" occurring in our own State before burial is permitted. In some of the continental countries of Europe a medical officer is appointed who examines every case of death without exception before burial. The advantage of such a system as a preventive of crime must be acknowledged.

The following recommendations were made by the Parliamentary Committee. Their general scope is quite in harmony with our own needs in Massachusetts.

SUMMARY OF PRINCIPAL RECOMMENDATIONS OF PARLIAMENTARY COMMITTEE ON DEATH CERTIFICATION.

(1) That in no case should a death be registered without production of a certificate of the cause of death signed by a registered medical practitioner or by a coroner after inquest.

(2) That in each sanitary district a registered medical practitioner should be appointed as public medical certifier of the cause of death in cases in which a certificate from a medical practitioner is not forthcoming.

(3) That a medical practitioner in attendance should be required, before giving a certificate of death, to personally inspect the body; but if, on the ground of distance or for other sufficient reason, he is unable to make this inspection himself, he should obtain and attach to the certificate of the cause of death a certificate signed by two persons, neighbors of the deceased, verifying the fact of death.

(4) That medical practitioners should be required to send certificates of death to the registrar instead of handing them to the representatives of the deceased.

(5) That a form of certificate of death should be prescribed, and that, in giving a certificate, medical practitioners should be required to use such form.

(6) That it should be made a penal offence to bury or otherwise dispose of a body, except in time of epidemic, without an order from the registrar, stating the

place and mode of disposal, which order, after it has been acted upon, should be returned to the registrar who issued it.

(7) That it should be made an offence to retain a dead body unburied or otherwise legally disposed of beyond a period not exceeding eight days, except by permission of a magistrate.

(8) That the practice of burial in pits or common graves should be discontinued.

(9) That still-births which have reached the stage of development of seven months should be registered upon the certificate of a registered medical practitioner, and that it should not be permitted to bury or otherwise dispose of the still-birth until an order for burial has been issued by the registrar.

LONDON, September, 1893.

In one respect, however, we are far in advance of our English friends; and that is in our inquest laws, which were entirely remodelled in 1877 by the introduction of the medical examiner system.

England still holds on to its musty coroner system with a tenacious grip. The coroner system, established more than a thousand years since, is about as well adapted to the uses for which it was designed as the bows and arrows of that period would be to the uses of modern warfare.

I will close with one or two extracts from the British report, to which I have already alluded, which illustrate this point.

Dr. Ogle, of the British Registration General's Office, reports the following verdicts of coroners inquests in England:—

"This man died from stone in the kidney, which stone he swallowed when lying on a gravel path in a state of drunkenness."

Another,— "Child, three months old, found dead, but no evidence whether born alive."

DR. EDWIN FARNHAM.— I think there is a general agreement of opinion among those familiar with the subject that more correct returns of the causes of death are very desirable. In a large proportion of cases what is returned is not the disease, but the name of its most striking phenomenon, or in some cases a term that is indicative of a mode of dying.

Again there are returns that violate all sense. Recently the following cause of death certified to by a physician came before me,— "Gastric neurasthenia of the heart." It may interest you to know that the signer of this certificate died shortly after of softening of the brain. In looking over the death records of Cambridge, I came across the following, the mention of which here will not, I trust, offend any possible descendant,— "John Dooris, Blacksmith, Uterine disease."

DR. CHARLES V. CHAPIN.— I agree with Dr. Fox in thinking that there is a considerable percentage of death returns in which the cause of death as given cannot be relied upon, but I think a part of this is unavoidable.

As we well know, a correct diagnosis is impossible in a certain proportion of cases; and I should prefer to have the physician say, "I don't know," rather than make a wild guess. I think, however, that in such cases a short account of the case is often of assistance. A good many poor certificates are due to the carelessness of the physician, and constant correspondence with and drumming up of those that are thus negligent will do more than anything else to educate them to a proper care in performing this duty.

The remainder of the meeting was devoted to a paper by Edmund M. Parker, Esq., of the Cambridge Board of Health, on "Certain Needed Legislation," and discussion thereon.

CERTAIN NEEDED LEGISLATION.

REMARKS OF EDMUND M. PARKER, ESQ.

Questions as to the exact extent of the powers of local boards of health are, in one connection or another, constantly presenting themselves to us; and when in any particular instance we have answered to our satisfaction or dissatisfaction, as the case may be, the question of what acts we are or are not authorized to do to remedy a particular evil, the need of some additional legislation, either to make more clear and intelligible the powers which we actually do possess or to confer additional powers, constantly forces itself upon our attention.

It is not my intention to attempt to cover the whole field which this subject, the need of additional legislation, opens up. I wish simply to direct attention to one or two matters which our local board has had occasion to consider lately, and concerning which the need of further legislation has seemed to me especially pressing. I trust that others may be induced to carry the investigation further, to the end that all such powers as may be necessary and proper for the local boards to have and exercise in order to perform their full duty to the community, may be conferred on them, and conferred so clearly and in language so intelligible that it will not be necessary, as it certainly is at present, to have always a lawyer at our elbow to show us the pitfalls into which we will surely tumble but for his aid.

The matters to which I wish especially to direct your attention are the powers of the local boards of health in dealing with and attempting to prevent the spread of contagious diseases; and I deem that the consideration of the exact extent of these powers is particularly worthy of your attention, because I believe that these powers are generally thought to be, in certain respects, much greater than they actually are.

Let us see, therefore, just what our powers are in dealing with conta-

gious diseases. At the outset we should note a difference between cases where the sick person can be removed and those where he is too ill to permit of removal without danger to his health.

When a disease dangerous to the public health breaks out in a town, the board is directed to provide immediately a hospital or place of reception for the sick and infected; and the board may cause any sick and infected person to be removed thereto, unless his condition will not admit of his removal without danger to his health, in which case the house or place where he remains shall be considered a hospital. (P. S., c. 80, § 75.) Both the hospitals provided by the board and places considered as hospitals on account of the presence there of sick persons who cannot be removed without danger to their health are to be subject to the regulations of the board.

Again it is provided in another place (P. S., c. 80, §§ 40, 41) that, where a person is or has lately been infected with the plague or other sickness dangerous to the public health, the board is to make effectual provision in the manner which it judges best for the safety of the inhabitants by removing such person to a separate house or otherwise providing nurses, etc.; and, if the sick person cannot be removed without danger to his health, the board shall make such provision where he is, and may cause persons in the neighborhood to be removed, and take such other measures as it judges necessary for the safety of the inhabitants.

You will notice that the power to cause persons in the neighborhood to be removed, and the power to treat the place where the patient is as a hospital, and subject it to regulations of the board, are both conditioned on the patient's being too sick to be removed without danger to his health. If he is not too sick to be removed, you may remove him or not, as you deem best; but you have no authority to subject the place where he is to hospital regulations, etc.

This scheme was apparently founded on the idea that the sole danger to the community was from the sick person; and no provisions whatever are made to protect against the danger from persons who may have been exposed to the contagion, but who, to use a popular phrase, have not as yet "come down" with the disease.

Having seen thus briefly what we can do in the case of an outbreak of a contagious disease, it may be well to consider certain things which we cannot do.

In the first place the board has no authority as a board of health to seize any place and use it as a hospital against the owner's will. The provisions of the statutes which require and which authorize the board to provide hospitals and make provision for the sick contemplate that the board shall hire a place or places for a hospital and for caring for the sick, and shall

hire nurses, etc., and purchase supplies therefor; but no authority to seize or impress any place as a hospital, or to seize necessities, nurses, etc., is given to the board.

If anything of this sort is necessary, the board can apply to two justices of the peace, who may issue a warrant to the sheriff, or his deputy, or any constable requiring them, under the direction of the board, to do these things; or, in the language of the old statute of the last century, still preserved in our Public Statutes, to impress and take up convenient houses, lodging, nurses, attendants, and other necessities.

Nor do I understand that we, as a board of health, have any authority to remove a patient against his will. For that we must have a warrant from two justices of the peace, as in case of seizing a house.

Next comes the question of quarantine in its various aspects. If the patient can be removed without danger to his health, we have no authority to treat the place where he is as a hospital, or subject it to hospital regulations, or to restrain those who have been exposed to the disease of their liberty, and so prevent their spreading the disease at will. Still less have we the power, after having removed the patient, to quarantine the persons who have been exposed to the disease, but who have not yet actually become sick with it. Yet I think it will be generally conceded that, in the case of many diseases, small-pox, for instance, that is almost the only effectual method of checking the spread of the disease; and that we ought to have the power to do this.

Coming now to the treatment of infected articles of clothing, we have no power as a board of health to seize, destroy, or disinfect these against the owner's will. We do have the power to require the householder to disinfect such articles to our satisfaction, and, practically, this is in most cases worked out by allowing us to do such disinfecting ourselves; but a matter of this importance ought not to be permitted to depend on the consent of the owner. We should have the right to seize, control, and disinfect, and, if we deem it necessary, to destroy articles which, in our opinion, are infected.

I therefore, in conclusion, recommend that we request, and, if possible, obtain from the legislature, these further powers in connection with the treatment of contagious diseases:—

First.—That of seizing convenient houses and other necessities for the care of those sick with contagious diseases.

Second.—The power to place in quarantine and isolate those who have been exposed to contagion, until the period for the breaking out of the disease has passed.

Third.—To seize, disinfect, and, if we deem needful, to destroy articles which have been exposed to contagion, and which may, in our opinion, spread the disease.

We may well, I think, in this State follow the example of Maine, in which jurisdiction the leading cases on the subject of the powers of local boards of health first arose. Until the passage of the statute of which I am about to speak, their powers were practically identical with ours; but in 1887 the Maine legislature passed an act, two of the sections of which are as follows:—

SECTION 7. Each local board of health constituted under this act shall have power and it shall be its duty:—

III. To guard against the introduction of contagious and infectious diseases by the exercise of proper and vigilant medical inspection and control of all persons and things coming within the limits of its jurisdiction from infected places or which for any cause are liable to communicate contagion, to give public notice of infected places by displaying red flags or by posting placards on the entrances of the premises, to require the isolation of all persons and things that are infected with or have been exposed to contagious or infectious diseases, and to provide suitable places for the reception of the same, and to furnish medical treatment and care for persons sick with such diseases who cannot otherwise be provided for, to prohibit and prevent all intercourse and communication with or use of infected premises, places, and things, and to require, and, if necessary, to provide the means for the thorough cleansing and disinfection of the same before general intercourse therewith or use thereof shall be allowed.

SECT. 18. Any local board of health may direct the destruction of any bedding, clothing, or other articles which have been exposed to infection.

There is another matter somewhat connected with the foregoing on which my friend Dr. Swift, of New Bedford, intended saying a few words; and, as he has been compelled to leave, I will briefly refer to it.

Under Chapter 198 of the Acts of 1885 the School Committee are forbidden to allow a pupil to attend the public schools while any member of the household to which it belongs is sick of small-pox, diphtheria, or scarlet fever, or during two weeks after the death, recovery, or removal of such sick person. Any pupil coming from such household shall be required to present to the teacher of the school a certificate from the attending physician or Board of Health of the facts necessary to entitle him to admission.

It appears that in New Bedford the School Committee and Board of Health have been advised that any pupil who presented a certificate from the attending physician of the facts necessary to entitle him to admission had a right to be admitted, and that the School Committee had no right to require such child to present a certificate from the Board of Health, much as they would like to require one.

If this advice be correct,—and on that point I express no opinion,—there will be no doubt in the mind of any one who has had any experience with

the results of permitting children in such cases to return to school on presenting a certificate from the attending physician that the law should, at least, be so changed as to permit the School Committee to require in all such cases a certificate from the Board of Health.

It is not stating the matter too strongly to say that the certificates issued by those who term themselves attending physicians in these cases are frequently of no value, and often worse.

I am happy to say that we in Cambridge have, whether rightly or wrongly, taken a different view of the question from that of New Bedford, and that the certificate of the Board of Health is now required in all these cases to enable a child to attend school, that of the attending physician not being accepted.

This certificate is issued by the physician to the Board, and only after personal examination by him of the case and its surroundings.

I thank you, gentlemen of the Association, for your courteous attention, and hope that through your aid and efforts our needs in this matter of additional legislation may be met and satisfied.

MR. JAS. C. COFFEY.—I would like to inquire of Mr. Parker through the chair if I understood him aright in saying that we have no authority to remove small-pox patients.

MR. PARKER.—You did.

MR. COFFEY.—I think the objections might be met by the adoption of rules. I know that Mr. Bailey, the counsel for the city of Boston, said at a meeting of this organization that rules made by boards of health were legal and valid now in relation to the matter of school certificates after contagious disease. The Worcester Board of Health were obliged to take into their own hands that power, it having been found that physicians abused the privilege. This was done by an arrangement entered into by the Board and the Superintendent of Schools, so that now all certificates are issued by the Board of Health. The two weeks required after recovery date from the day of fumigation.

Speaking to the question of needed legislation. I don't think interest enough is taken by the members of this organization in legislation affecting boards of health. Take the recent legislation in relation to plumbing. No attention was paid to what we wanted, but the plumbers by their activity and the interest manifested by them obtained what they desired. The proper thing for us to do is for each member to see the representative from his district personally, and impress upon him the necessity for better legislation.

I have the honor to be associated with Dr. Durgin and Judge Smith on the Committee on Legislation of this society. In trying last winter to get a

law passed to make medical examiners see the bodies of all those who die without a physician being in attendance, and certify the cause of death, notwithstanding the fact that we had this society, together with a number, if not all, of the medical examiners of the State with us in advocating the passage of such a law, and also the State Board of Health represented by its secretary, Dr. Abbott, and the framer of the present law, there was in opposition to us one medical examiner who is described as a "good fellow and a hustler"; and we were bowed out of court.

DR. B. F. DAVENPORT.—To prevent children from infected households being returned, in the manner just related, to schools, upon the certificates of physicians, so called, before they have actually passed through the contagious period, may it not become expedient for boards of health to agree upon certain minimum periods before the expiration of which, at least, they will not deem recovery to have become established? Permits for return to school to be issued by the Board only after the receipt of the attending physician's certificate, and a satisfactory verification thereof.

Such a regulation has been adopted by the Board of Health of Watertown, in its code, which is as follows:—

REGULATION 21. No pupil shall attend the public schools while having whooping-cough, or while any member of the household to which such pupil belongs, or occupant of the house in which he dwells, is sick of small-pox, diphtheria, scarlet fever, measles, or any other disease which, in the opinion of the Board, may endanger the public health. Nor shall any such pupil attend within a period of two weeks after the recovery, death, or removal of any such person, and the disinfection of the household to the satisfaction of the Board. Recovery will not be deemed by the Board to have been established before at least two weeks have elapsed since the beginning of the attack in case of measles, of four weeks in case of small-pox or diphtheria, and of six weeks in case of scarlet fever. Any pupil coming from such a household shall, before admission, present to the teacher of the school a permit from the Board of Health, which permit will be granted only after the Board has received a notice from the attending physician that it is now, in his opinion, safe to have the pupil attend school.

Although these minimum limits may at times occasion unnecessary exclusion from school, yet it will be for the public interest that the individual loses a little extra time rather than by returning too early the life and time of many others be thereby endangered.

MR. COFFEY.—I want to say that we have established in Worcester since September 1 a bacteriological department. It is working well, and has already demonstrated its usefulness. It has the support of practically all the physicians of the city.

We have had several cases which the attending physician thought was diphtheria; but no Klebs-Loeffler bacilli were found, and consequently the

patients and their families were saved a lot of trouble, not to mention the expense. We also have had cases which the physician thought was nothing but ordinary sore throat, yet we found Klebs-Loeffler bacilli, thus proving its usefulness.

We have not as yet made any formal rule to remove quarantine until a bacteriological examination fail to find Klebs-Loeffler bacilli; but in practice, through the co-operation of the attending physician, we are doing just that. I have already said it is working well, and has already proved its usefulness.

DR. DAVENPORT.—*Mr. Chairman*,— I wish to call the attention of this Association to the hearings which are now being held before the State Board of Harbor and Land Commissioners, acting under a resolve passed by the last legislature. The question which is principally in dispute is, What would be the sanitary effect of constructing such a dam in the tidal basin of Charles River as was proposed in the joint report of the Metropolitan Park Commission and the State Board of Health? Believing for myself that it would be greatly for the benefit of the public to have the recommendation of these two very able boards adopted, I wish that this Association would discuss the subject, express its opinion, and forward its conclusion to the Harbor and Land Commission, who would doubtless give them due consideration.

After a brief discussion, the following resolution was offered by Dr. Davenport, and was unanimously adopted by the Association, and a copy ordered to be sent to the Harbor and Land Commission.

Resolved, That the Massachusetts Association of Boards of Health approves the report of the Metropolitan Board of Park Commissioners and the State Board of Health, especially of that part relating to the building of the dam in the Charles River Basin.

The meeting was then adjourned.

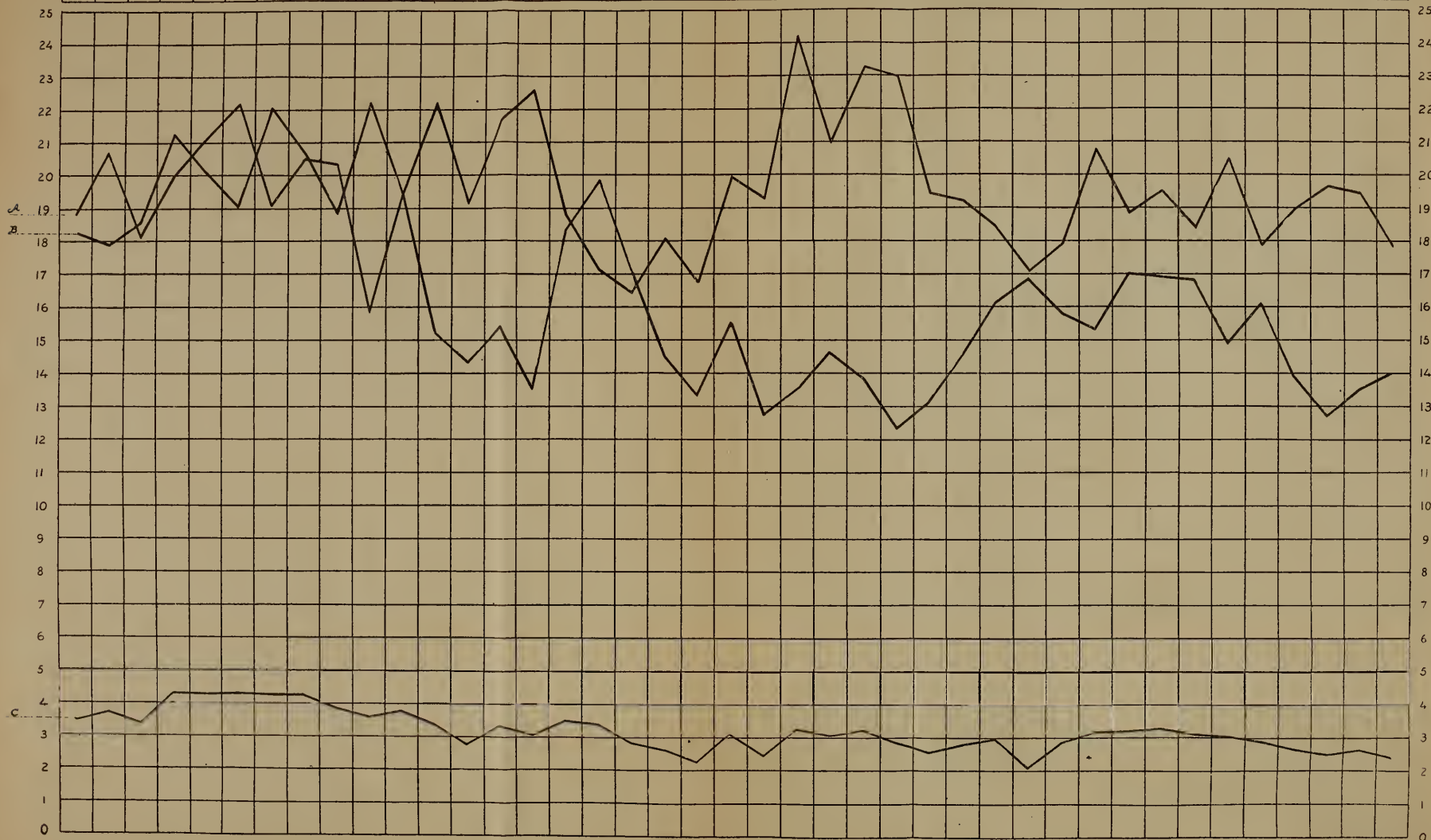
Cambridge

A --- Mortality per 1000 living at all ages from all causes 1850 to 1890.

B --- Percentage of deaths from Phthisis in deaths from all causes 1850 to 1890.

C --- Mortality per 1000 living at all ages from Phthisis 1850 to 1890.

	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90
A	18.79	20.65	18.07	19.99	21.11	22.17	19.08	20.47	20.31	15.87	19.37	22.15	19.13	21.62	22.56	18.82	17.10	16.41	18.06	16.73	19.93	19.26	24.10	20.98	23.24	22.97	19.42	19.18	18.40	17.07	17.92	20.75	18.82	19.48	18.39	20.48	17.89	18.96	19.64	19.42	17.82
B	18.18	17.8	18.5	21.2	20.0	19.0	22.0	20.6	18.8	22.2	19.4	15.2	14.3	15.4	13.5	18.3	19.8	17.1	14.5	13.3	15.5	12.7	13.5	14.6	13.8	12.3	13.1	14.5	16.1	16.8	15.8	15.3	17-	16.9	16.8	14.89	16.1	13.9	12.7	13.5	14.0
C	3.41	3.68	3.34	4.24	4.22	4.26	4.21	4.22	3.81	3.56	3.76	3.37	2.74	3.33	3.05	3.50	3.39	2.82	2.62	3.23	3.10	2.44	3.26	3.07	3.22	2.84	2.54	2.79	2.97	2.08	2.84	3.18	3.20	3.30	3.12	3.05	2.88	2.64	2.50	2.63	2.39



INDEX VALUE OF CURVES REPRESENTING PERCENTAGE
OF DEATHS FROM PHTHISIS IN DEATHS FROM
ALL CAUSES.

(Omitted from Report of a previous meeting.)

REMARKS OF EDWIN FARNHAM, M.D., OF CAMBRIDGE.

I wish to call the attention of the Association to the three curves on the accompanying diagram. The upper two curves represent respectively (line A) the mortality per thousand living at all ages from all causes, and (line B) the percentage of deaths from phthisis in deaths from all causes. The lowest curve (line C) represents the mortality per thousand living at all ages from phthisis. As the percentage curve is sometimes used as a measure of the amount of a disease or of the deaths due to that disease, I will compare the two curves relating to phthisis; namely, those indicating its mortality and its percentage. In the forty years, 1851 to 1890 inclusive, these curves rose or fell together twenty-one times: one rose while the other fell nineteen times; *i.e.*, there was agreement in twenty-one, and disagreement in nineteen years. It seems that for the forty years in Cambridge under consideration the index value of the percentage curve has been little. For another series of years, or in a different place, it might be otherwise; but I think that the rise and fall are governed by the varying number of deaths from all the other causes far more than they are by the fluctuations in the number of deaths from phthisis.

ENGLISH REGULATIONS FOR CLOSING SCHOOLS BY ORDER OF BOARDS OF HEALTH.

(Omitted from Report of a previous meeting.)

REMARKS OF S. W. ABBOTT, M.D.

MR. CHAIRMAN.— This is a peculiarly practical question, and involves many points which are worthy of careful consideration. To my knowledge it has presented itself in the following cities and towns within the past two or three years, and is also mentioned in the reports of the boards of health of other places. Those cities and towns were Pittsfield, Worcester, Attleboro, Melrose, Palmer, Nahant, Norwood, Bridgewater, Concord, Great Barrington, Plymouth, Canton, and Falmouth.

The following questions are liable to arise in connection with this subject: (1) Whether a school should be closed or not; (2) How long should it remain closed, and when should it be opened? (3) For what diseases should a school be closed? (4) What treatment should the school-house receive after closing (with reference to disinfection and other means of cleansing)?

Much depends on the harmonious action between the Board of Health and the School Committee, hence it is desirable that a conference of these two authorities should be held in such cases. The closing of a public school is a serious matter; and this measure ought not to be taken without serious consideration, especially in a large and well-attended school.

Boards of health occasionally adopt measures which are unwarranted and arbitrary with reference to the restriction of the spread of disease. Here is an example.

NOTICE.

The Primary School is closed until further notice on account of Scarlet Fever. As a precautionary measure, parents are requested to quarantine their children.

.....1893.

By order of the Board of Health.

In this instance the Board of Health not only closed a school, but requested the families (whether sick or well) to quarantine their children; and yet scarlet fever did not exist in more than three families in the town.

English experience upon this point is valuable. I will therefore quote a few paragraphs from the recent circular of the Local Government Board of England, which are so valuable that it was thought best to print the circular in the last report of the State Board of Health (23d Report, 1891, p. xvi).

2. In the Code of Regulations approved by the Committee on Education the following article prescribes, as one of the general conditions required to be fulfilled by a public elementary school in order to obtain an annual Parliamentary grant, that "the managers *must at once comply with any notice of the sanitary authority* of the district in which the school is situated, requiring them for a specified time, with a view to preventing the spread of disease, either to close the school or to exclude any scholars from attendance; but after complying they may appeal to the department, if they consider the notice to be unreasonable."

3. The diseases for the prevention of which school closure or the exclusion of particular children will be required are principally those which spread by infection directly from person to person, such as scarlet fever, measles, diphtheria, whooping-cough, small-pox, r  theln, the order in which the several diseases are here given being about that of the relative frequency with which their occurrence gives rise to these questions at school. More rarely, the same questions arise in connection with enteric fever, and diarrh  al diseases which spread, not so much by direct infection from person to person, as indirectly through the agency of local conditions, such as infected school privies.

4. It will be seen that the article quoted above confers upon sanitary authorities an alternative power with respect to public elementary schools.

(a) To cause particular scholars to be for a specified time excluded from attendance, or

(b) To require the school to be closed for a specified time.

5. (A) First, as to exclusion from school of particular scholars. Here it will be convenient to consider the circumstances under which the requirements of the public health will be satisfied by the less severe measure of the exclusion from school of particular children.

(a) It may be laid down as a universal principle that all children suffering from any dangerous infectious disorder (*i.e.*, of a nature dangerous to some of the persons attacked by it, however mild in other cases) should be excluded from school until there is reason to believe that they have ceased to be in an infectious condition.

(b) Furthermore, as it is rarely possible to provide effectual separation of the sick from the healthy within the homes of children of the class attending public elementary schools, it must commonly be necessary that all children of an infected household should be excluded from school: first, because otherwise such children might attend school while suffering from the disease in a latent form or at an unrecognized stage; and, secondly, because it is known that infection may attach itself to and be conveyed by the clothes of a person living in an infected atmosphere, even though the person himself remain unaffected. The same considerations will sometimes make it desirable to prohibit the attendance at school of all children from a particular street or hamlet.

In the case of infectious diseases involving little or no danger to life, such as mumps or skin diseases, school interests may be more particularly considered. In such case, however, the rule of prohibiting the attendance of every child while in an infectious state will commonly prove to be the right one; for, if disease should spread to other scholars, owing to the continuance of an infected child at the school,

there will be greater ultimate loss of attendance with corresponding loss of credit to the school.

6. (B) Secondly, as to the closing of schools. This, by more seriously interfering with the educational work of a district, is a much more grave step for a sanitary authority to take than to direct the exclusion of particular scholars. It is a measure that seldom ought to be enforced, except in presence of an actual epidemic, nor even then as a matter of routine, nor unless there be a clear prospect of preventing the propagation of disease, such as could not be looked for from less comprehensive action. The mere fact that in an epidemic many of the sufferers are school children does not necessarily show that the disease was caught at school; but the school may with probability be regarded as spreading infection if in a large majority of households attacked the first case be a child attending school, and with still greater probability if a number of children living at a distance from one another, and with no circumstances in common except that they attend the same school, should be simultaneously attacked, and if it can be ascertained that a child or teacher in an infectious state has actually been attending the school.

9. In deciding whether an outbreak of infectious disease among children of school age may be best combated by closing the school, or whether it will suffice to exclude the children of infected households, the two most important points to be considered are: the completeness and promptness of the information received by the officers of the sanitary authority respecting the occurrence of infectious cases; the opportunities which exist for intercourse between the children of different households elsewhere than at school.

10. The more prompt and full the knowledge of cases of infectious disease that the sanitary authority are able to obtain, the better will be the prospect of checking such disease by keeping away from school the children of infected households, and the less will be the necessity for closing schools. If the cases be few in number and their origin known, the exclusion from school of the children of infected households will probably suffice; but this measure will fail where there are many undiscovered or unrecognized cases, or where the known centres of infection are peculiarly numerous.

Commonly, the failure of carefully considered measures of exclusion to stay the spread of an epidemic which shows a special incidence upon school children may be regarded as pointing to the continued attendance at school of children with the prevalent disease in a mild or unrecognized form; and a strong case will appear for the closing of schools.

If, by reason of the absence or exclusion of a large number of children the attendance at a school be greatly reduced, it may be found better to close it altogether. This is especially apt to occur in the case of epidemics of measles, a disease which is very infectious in the early stages, before the characteristic rash has appeared, and while the symptoms resemble those of a common cold.

11. The second material consideration, in deciding as to the desirability of closing schools during the prevalence of infectious disease, is the amount of opportunity for intercommunication between the members of different households elsewhere than at school. In sparsely populated districts, where the children of

different households or of separate hamlets rarely meet except at or on their way to, the village school, the closing of the school is likely to be effectual in checking the spread of disease. It is less likely to be useful in a town or compact village (particularly where houses are sublet and yards are in common), where the children of different households, when not at school, spend their time in playing together, and often run in and out of each other's houses. In some such places the closing of school has even appeared to do harm rather than good.

In rural districts, where epidemic diseases are less frequently prevalent, school closing may be required as an exceptional measure to meet an exceptional state of things. As regards more populous places, it must not be forgotten that, if schools were to be closed whenever an infectious disease was prevalent, there are many places where schools would hardly ever be open. It will sometimes be necessary to close a school for a day or two to allow of the rectification of sanitary defects of a nature to extend disease or in order that the school may be disinfected or purified. It has happened that infectious sickness in the master's family has forbidden the attendance of scholars. These more temporary and occasional closures of schools are contemplated in the education code, and are to be regarded as having a real importance of their own.

12. In places where there are several public elementary schools, if an outbreak of infectious disease be confined to the scholars of one particular school, it may be sufficient to close that school only. But, where different schools have all appeared to aid in the spread of disease (though perhaps to an unequal extent), the sanitary authority may consider it advisable that all should be closed, lest children in an infectious state who previously attended the schools that are closed should be sent to others that might remain open.

It must be remembered that sanitary authorities have no power in respect of Sunday-schools or other private schools, except in so far as these may contravene section 91 (5), section 126, or other provision of public health act, 1875; but it will often be expedient to invite the co-operation of managers of such schools in efforts for securing the public health. Experience shows that they are usually ready to defer to the representations of the authority responsible for the public health of the district.

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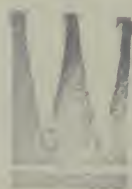
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